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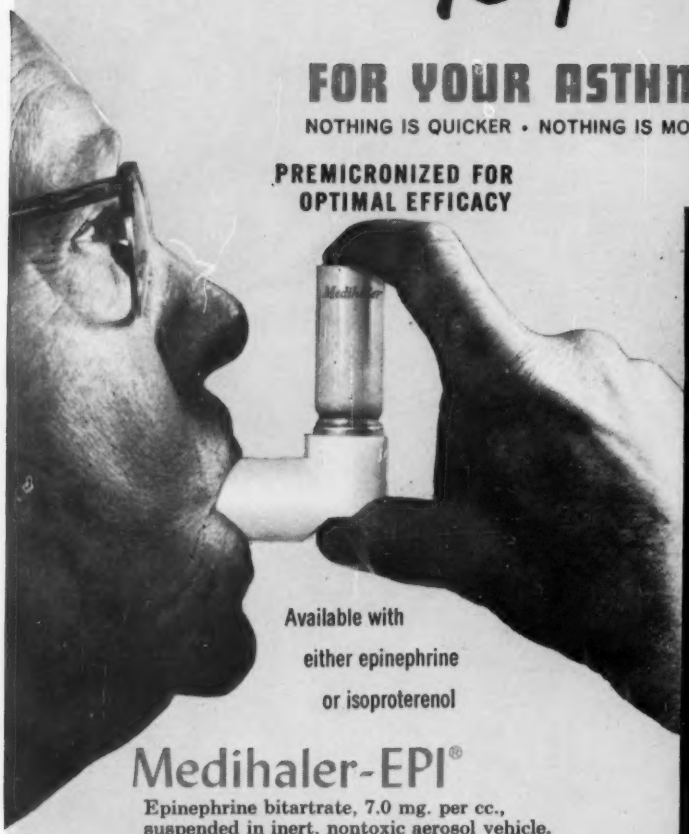

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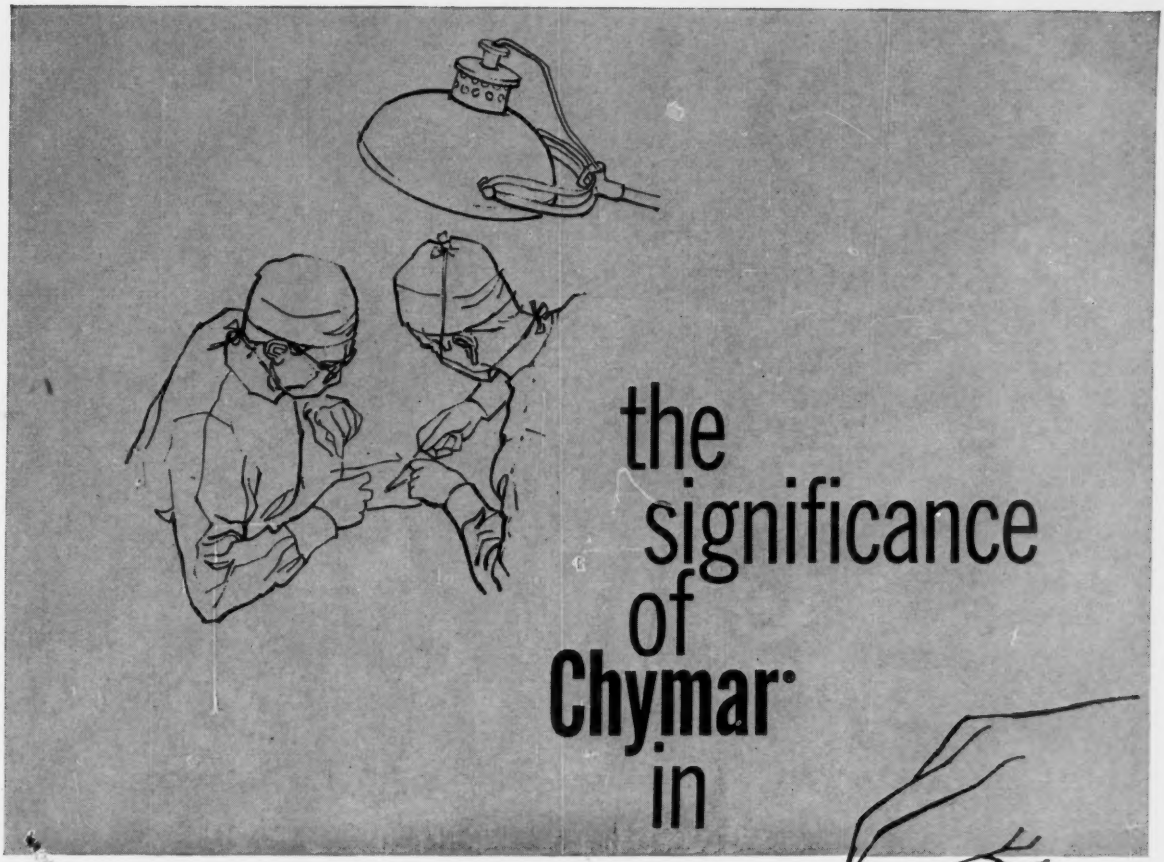

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INDUSTRIAL MEDICINE AND SURGERY

ESTABLISHED 1932

The International Journal of Medicine in Industry

JANUARY, 1959

VOLUME XXVIII
NUMBER 1

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PERSONAL NEWS AND NOTES

S. D. STEINER, M.D., was appointed as Medical Director of General Motors Corporation, December 1, 1958. He succeeds MAX R. BURNELL, M.D., who retired on November 1, 1958.

DR. STEINER attended both literary college and medical school at the University of West Virginia. He transferred to the Northwestern University Medical School in 1935, and received his medical degree from there in 1937. He was intern at University Hospital in Pittsburgh and then became public health officer of Brooke County, West Virginia.

In 1939, he received a Rockefeller Foundation Scholarship to Harvard University. He received his master's degree in public health from Harvard in 1940. After serving for another year as public health officer of Brooke County, he joined the U. S. Public Health Service in its division of industrial hygiene in 1941. In 1942 he went with the industrial hygiene division of the Maryland State Health Department and served there until 1944.

In 1944, he joined the Cadillac Motor Car Division as plant physician and in 1945, went to Oldsmobile in the same capacity. He was made Medical Director of Oldsmobile a year later.

DR. STEINER has been certified by the American Board of Preventive Medicine in Occupational Health and is a member of the American Academy of Occupational Medicine. He is a Fellow of the Industrial Medical Association and is currently serving as treasurer of the Ingham County Medical Society.

American Academy of Occupational Medicine will hold its Eleventh Annual Meeting on February 11-13, 1959, at the Sheraton Plaza Hotel, Boston, Massachusetts. Among the presentations will be a symposium on "Pharmacological and Biochemical Approaches to Mental Disorders," arranged and moderated by MARK ALTSCHULE, M.D., McLean Hospital; a field trip to the Massachusetts Institute of Technology; a symposium on "Transplantation of Tissues and Organs," by JOHN MERRILL, M.D., Senior Associate in Medicine at Harvard Medical School; a paper on "Recent Advances in Therapy of Infectious Diseases," by LEWIS WEINSTEIN, M.D., Associate Professor of Medicine, Boston University School of Medicine, and a series of individual papers on "Fatalities from the Use of EDTA in Lead Intoxication," "Recent Work on Atmospheric Pollution and Synergistic Action of Certain Substances Involved" and "Physiological Aspects of Fatigue." A paper entitled "Ocular Effects of Radiation (Ionizing and Electromagnetic)" will be presented by DAVID COGAN, M.D., Professor of Ophthalmology, Harvard Medical School and Director, Howe Laboratory, Massachusetts General Hospital. This will be followed by "Fundamentals of a Nuclear Reactor," PROFESSOR THOMPSON, Director, Massachusetts Institute of Technology Nuclear Reactor; "Health Hazards Associated with a Nuclear Reactor," PROFESSOR MALETZKOS, Radiation Protection Officer, M.I.T. Nuclear Reactor; and

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"Clinical Applications of Reactor Products (a) Isotopes," MARTIN LUBIN, M.D., Harvard Medical School, and (b) "Energy," speaker not yet selected. Nonmember physicians interested in attending, contact: LAMSON BLANEY, M.D., Walton Road, Blue Bell, Pennsylvania.

HERBERT B. ALLEN, M.D., recently accepted a position as Medical Director of Abraham and Straus, the Brooklyn Department store. DR. ALLEN attended Yale University and received his M.D. from University of Minnesota Medical School, 1936. From 1936 to 1938 he interned at Kings County Hospital, Brooklyn. With the U. S. Army he spent two years in Iceland and two years in England on the surgical staff of a station hospital. From 1947 to 1950 he was Assistant Medical Examiner for the Pennsylvania Railroad, in charge of the Long Island Division. From 1950 to 1953 he was Dispensary Officer of the Joint Brazil-U.S. Military Commission in Rio de Janeiro, as physician to American Military and State Department personnel and their families. DR. ALLEN became a Fellow of the Industrial Medical Association in April, 1958.

Industrial Ventilation Conference will be held at Kellogg Center for Continuing Education, Michigan State University, East Lansing, Michigan, February 16-19, 1959. The Conference presents practical, informative lectures and design problems for ventilation designers, contractors and consultants. Besides industrial ventilation, the Conference will deal with mining ventilation design, for underground ventilation as well as dust control for ore handling and crushing. Lectures will include air flow fundamentals, testing of exhaust systems, fan selection and application, collector performance and make-up air applications. For further information, write: 8th Annual Industrial Ventilation Conference, Continuing Education Service, Michigan State University, East Lansing, Michigan.

RICHARD A. PRINDLE, M.D., has been named Chief of the Air Pollution Medical Program of the Public Health Service, Surgeon General LEROY E. BURNEY announced recently. He succeeds WILTON M. FISHER, M.D., who will become Chief of the Training Branch of the Public Health Service's Division of Personnel. DR. PRINDLE has been associated with the air pollution medical program for the past year and a half. He was commissioned in the Public Health Service in July, 1951. During his Service career, he has been charged with various epidemiologic responsibilities, both in research and teaching. He was formerly assigned to the International Cooperation Administration as medical officer and technical consultant in public health with the U.S. Operations Mission to Haiti. A graduate of Harvard University, DR. PRINDLE was awarded his M.D. degree in 1948 and the degree of Master of Public Health in 1954. He is a diplomate of the National Board of Medical Examiners and is certified by the American Board of Preventive Medicine and Public Health, a Fellow of the American College of Preventive Medicine, the American Public Health Association, and the American Medical Association. He is also a mem-

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ber of the American Association of Public Health Physicians and the American Society of Tropical Medicine and Hygiene.

British Occupational Hygiene Society will present a Symposium on Inhaled Particles and Vapors to be held at Oxford in April, 1960. The Symposium will be concerned with the physical, chemical and physiological factors governing the entry of harmful substances into the body via the respiratory system. The subjects of the Symposium have a bearing on many hygiene problems including silicosis, asbestosis and the other pneumoconioses, and on the damage to health produced by smog, tobacco smoke, radioactive gases and dusts, airborne bacteria and toxic vapors. The Society believes that the Symposium will meet a real need in providing an opportunity for the comprehensive discussion of recent research in this field and that the published proceedings will be of value not only to research workers, but also to those concerned with the practical problems of establishing and maintaining safe environments. For further information, notify the Chairman of the Organizing Committee, MR. W. H. WALTON, Assistant Director, Mining Research Establishment, National Coal Board, Worton Hall, Worton Road, Isleworth, Middlesex, as soon as possible.

Association of Industrial Medical Officers (Great Britain), at the Annual General Meeting held October 31, 1958, the following officers were elected: President—DR. W. E. CHIESMAN, C.B., F.R.C.P., The Treasury, Whitehall, London, S.W. 1; President-Elect—DR. T. S. SCOTT, Clayton Aniline Company Ltd., Manchester 11; Honorary Secretary—DR. R. A. GORDON SMITH, Albert E. Reed and Company, Ltd., Larkfield, near Maidstone, Kent; and Honorary Treasurer—DR. P. A. B. RAFFLE, London Transport Executive, Griffith House, 280 Marylebone Road, London, N.W.1.

Aero Medical Association will present its Thirtieth Annual Meeting at the Statler Hotel, Los Angeles, California, April 27 to 29, 1959. CHARLES I. BARRON, M.D., Lockheed Aircraft Corporation, is General Chairman.

American College of Allergists presents its Graduate Instructional Course and Annual Congress, March 15-20, 1959, at the Mark Hopkins Hotel, San Francisco, California. For further information, contact: JOHN D. GILLASPIE, M.D., Treasurer, 2049 Broadway, Boulder, Colorado.

Columbia University, School of Public Health and Administrative Medicine, in conjunction with the American Academy of Occupational Medicine is planning the Second Annual Institute for Physicians in Industry, February 6-10, 1958 in New York City. Six courses of four three-hour sessions each will be presented. Courses will be given in biostatistics, toxicology, and epidemiology. The remaining three courses will be selected from a prepared list on the basis of interest indicated by potential participants. A prerequisite for enrollment in the biostatistics course will be completion of the Home-Study Course in Biostatistics offered through American Academy of Occupational Medicine. For all further information, write: HAROLD BAUMGARTEN, JR., Program Director, Program of Continued Education, Columbia University, School of Public Health and Administrative Medicine, 600 West 168th Street, New York 32.

Industrial Medical Directors Forum convened in its annual meeting in Ann Arbor, Michigan on December 4, 1958. This assembly was arranged by NORBERT ROBERTS, M.D., and DUDLEY IRWIN, M.D. Membership in this invitational group is limited to industrial medical directors for organizations with multiple plant operations. The chief concern of this body relates to occupational health administrative procedures. On the second day, this forum group convened in attendance with the Tenth Annual Selby Discussional, also in Ann Arbor.

Tenth Selby Discussional was held December 5-6, 1958, in Ann Arbor, Michigan. Every year for 10 years a group of approximately 50 industrial physicians from all over the nation have met informally in Ann Arbor for appraisals and estimates of activities in occupational health, usually of a nonscientific nature. Provisions for this year's discussional were made by SEWARD MILLER, M.D., Director, Institute of Industrial Health, University of Michigan. From long precedent, the proceedings of this conference are seldom made available for publication. As an exception, two presentations of scientific character will be expanded into formal manuscripts. These are "Arsine Poisoning," ELSTON L. BELKNAP, M.D., Milwaukee, and "Synergistic Effects of Mixed Industrial Exposures," ARTHUR J. VORWALD, M.D., Detroit. The second day of this discussional was devoted to scientific pursuits through presentations by MARVIN H. POLLARD, M.D., "Gastric Ulcer," JOHN F. HOLT, M.D., "Some Radiologic Aspects of Skeletal Disease," and WALTER M. WHITEHOUSE, M.D., "Pulmonary Nodular Lesions."

Ohio Industrial Nurses Association, Ohio League for Nursing, Ohio State Nurses Association and Ohio State Health Department are sponsoring the fifth regional Institute for Occupational Health Nurses at Dayton, February 21 and 28, 1959.

Local, state and national representatives will assist with the program. Two national occupational health consultants who will participate are MISS MARY LOUISE BROWN and MRS. MABELLE MARKEE. MISS BROWN is Assistant Professor of Public Health (Occupational Health Nursing) at the Yale University Department of Public Health, and the Occupational Health Nursing Consultant for the National League for Nursing. MRS. MARKEE is Chief Industrial Nursing Consultant for the Occupational Health Program, Division of Special Health Services, U.S. Public Health Services, Washington, D.C.

Topics under consideration will be Legal Aspects of Industrial Nursing, Workmen's Compensation, Recognition and Control of Occupational Diseases, Health Education, Mental Health and Industrial Radiation Hazards.

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1. Lawler, E. G. and Limperis, N.M.: Clin. Med. (Dec.) 1958. 2. Medical Science, 3:376-377 (Mar. 25) 1958. 3. Cavallito, C. J. and Jewell, R.: J. Am. Pharm. A. (Scient. Ed.) 47:165-168, 1958. 4. Antibiotic Med. & Clin. Therapy 5:578-581 (Sept.) 1958.

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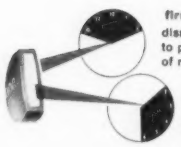
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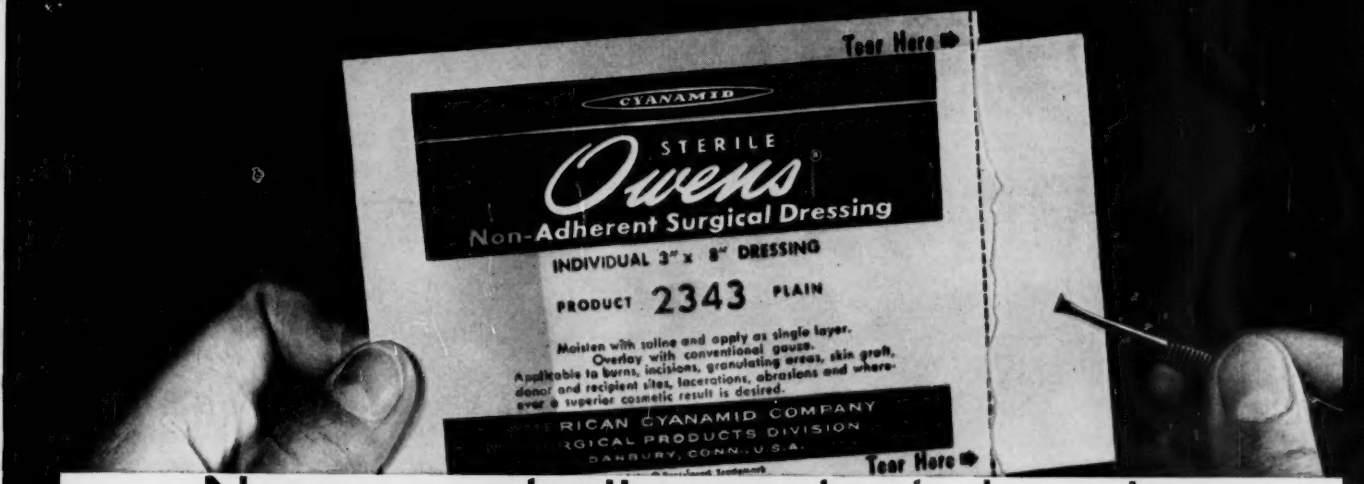
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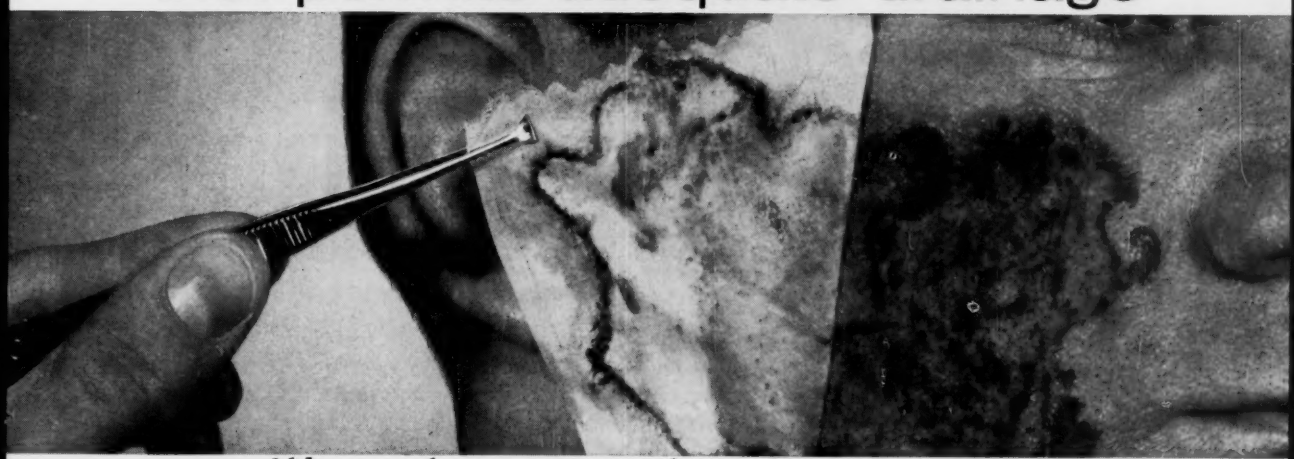

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[1] Thomson, J. E. M.: Am. J. Surgery 91:413, 1956

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References: Annals of Allergy, Vol. 6. July-August 1948. Study of a New Histamine Antagonist, The Pennsylvania Med. J., Vol. 51. Clinical Study of a New Antihistaminic Drug—Phenindamine. Dristan Clinical Study.

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TEAMWORK

Foods selected from four food groups, by supplementing each other, can provide all of the energy and essential nutrients needed by adults and children for health . . . maintenance . . . and growth.

In *A Guide to Good Eating*, our common foods have been placed in four separate groups as shown in the chart. Each group makes special contributions. These minimum servings provide the average adult approximately the following amounts of the Recommended Dietary Allowances for essential nutrients . . .

from milk or its equivalent in dairy foods . . . ⅔ of the calcium . . . about ½ the riboflavin . . . ¼ the protein . . . and ⅕ the vitamin A . . .

from the meat group . . . when some eggs and glandular meats are chosen . . . more than ⅓ of the protein and iron . . . ½ the niacin . . . and about ¼ the thiamine, riboflavin and vitamin A . . .

from vegetables and fruits . . . all of the vitamin C . . . ¾ the vitamin A value . . . about ¼ the iron . . . and ⅕ the thiamine . . .

from enriched or whole grain breads and cereals . . . ¼ the thiamine . . . and ⅕ the niacin and iron.

In addition, each group provides significant amounts of many other nutrients. For instance, milk and dairy foods provide some of all nutrients known to be essential to man . . . and breads and cereals supplement the protein, B vitamins and minerals of the milk, meat, and vegetable-fruit groups.

Eaten in the minimum amounts suggested, these foods form the basis of an adequate diet but do not meet the recommended allowances for energy and all of the nutrients. Additional amounts of the same or other foods are usually needed. Sugars, syrups, fats and oils used in food preparation provide mainly energy.

When combined in well-prepared meals, foods selected from each of these four food groups can satisfy the tastes, appetites and nutrient needs of all members of the family . . . young and old.

USE DAILY

A GUIDE TO GOOD EATING

DAIRY FOODS
3 to 4 glasses milk—children
4 or more glasses—teenagers
2 or more glasses—adults
Cheese, ice cream and other milk-made foods can supply part of the milk

MEAT GROUP
2 or more servings
Meats, fish, poultry, eggs, or cheeses—with dry beans, peas, nuts as alternates

VEGETABLES AND FRUITS
4 or more servings
Include dark green or yellow vegetables, citrus fruit or tomatoes

BREADS AND CEREALS
4 or more servings
Enriched or whole-grain
Added milk improves nutritional values

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

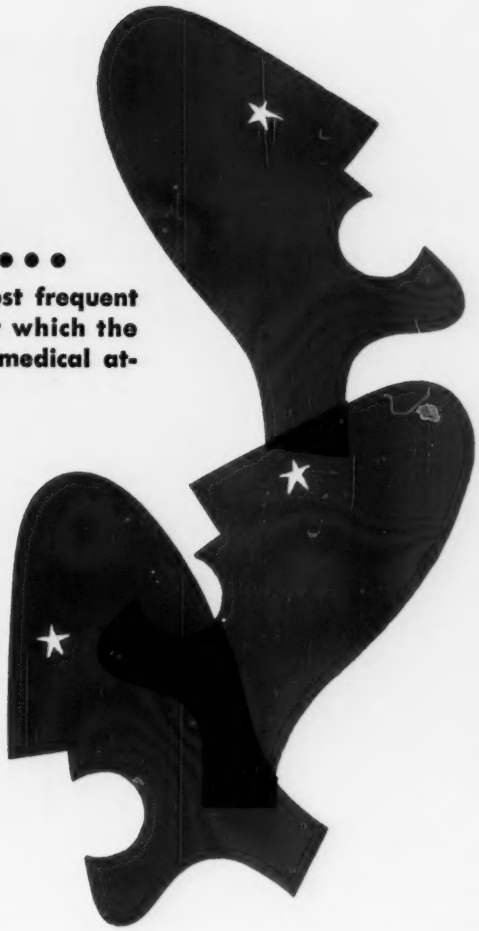
Since 1915 . . . promoting better health through nutrition research and education

NATIONAL DAIRY COUNCIL
A non-profit organization
111 NORTH CANAL STREET • CHICAGO 6, ILLINOIS

THIS ADVERTISEMENT IS ONE OF A SERIES. REPRINTS ARE AVAILABLE UPON REQUEST.

"COUGH...

one of the most frequent symptoms for which the patient seeks medical attention."[1]



SYNEPHRICOL®

ANTIHISTAMINIC • DECONGESTANT

Cough Syrup

...relieves the cough due to colds
...eases the allergic cough

Synephricol acts by prompt and prolonged decongestion of bronchial mucous membranes, by mild central sedation, and by decreasing sensitivity of the pharyngeal mucosa through antihistaminic action.

FORMULA:
(4 cc. teaspoonful)

Neo-Synephrine® hydrochloride	5.0 mg.
Thenfadil® hydrochloride	4.0 mg.
Dihydrocodeinone bitartrate*	1.33 mg.
Potassium guaiacol sulfonate	70.0 mg.
Ammonium chloride	70.0 mg.
Menthol	1.0 mg.
Chloroform	0.0166 cc.
Alcohol	8%

**Exempt narcotic*

DOSAGE:

Adults—1 or 2 teaspoonfuls every two to four hours, not to exceed 5 doses in twenty-four hours.

Children 6 to 12 years—½ to 1 teaspoonful four or five times daily.

BOTTLES OF 1 PINT AND 1 U. S. GALLON.

Winthrop LABORATORIES
NEW YORK 18, N.Y. • WINDSOR, ONT.

1. Banyai, A. L.: Management of Cough in Daily Practice. *J.A.M.A.*, 148:501, Feb. 16, 1952.

Synephricol, Neo-Synephrine (brand of phenylephrine) and Thenfadil (brand of thenyldiamine), trademarks reg. U.S. Pat. Off.

Now—All cold symptoms can be controlled

Provides Triaminic for more complete and more effective relief from nasal and paranasal congestion because of systemic transport to *all* respiratory membranes—without drawbacks of topical therapy.†

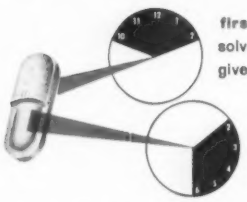
Provides well-tolerated APAP (N-acetyl-p-aminophenol) for prompt and effective analgesic and antipyretic action to make the patient more comfortable.

Provides Dormethan (brand of dextromethorphan HBr) for non-narcotic antitussive action on the cough reflex center in the medulla—as effective as codeine but without codeine's drawbacks.

Provides terpin hydrate, classic expectorant to thin inspissated mucus and help the patient clear the respiratory passages.

†Lhotka, F. M.: Illinois M. J. 112:259 (Dec.) 1957. Fabricant, N. D.: E. E. N. T. Monthly 37:460 (July) 1958. Farmer, D. F.: Clin. Med. 5:1183 (Sept.) 1958.

Special "timed release" design



first—the outer layer dissolves within minutes to give 3 to 4 hours of relief

then—the inner core releases its ingredients to sustain relief for 3 to 4 more hours

also available for those patients who prefer liquid medication: **Tussagesic suspension**

Each TUSSAGESIC tablet provides:

TRIAMINIC®	50 mg.
(phenylpropanolamine HCl	25 mg.
pheniramine maleate	12.5 mg.
pyrilamine maleate	12.5 mg.)
Dormethan (brand of dextromethorphan HBr)	30 mg.
Terpin hydrate	180 mg.
APAP (N-acetyl-p-aminophenol)	325 mg.

Dosage: One tablet in the morning, midafternoon and in the evening, if needed.

Tussagesic* *timed-release tablets*

Contains* **TRIAMINIC *to* STOP *running noses* *and open stuffed noses orally*

SMITH-DORSEY • a division of The Wander Company • Lincoln, Nebraska • Peterborough, Canada

Until the discovery of DECADRON* by MERCK SHARP & DOHME, when your diabetic patients were also in need of corticosteroid treatment, you were often faced with a difficult therapeutic dilemma. Diabetes mellitus was a recognized contraindication to the use of corticosteroids, since they not only aggravated the existing diabetic symptoms, but often precipitated latent diabetes.

NOW EVEN many diabetic patients may have THE FULL BENEFITS OF CORTICOSTEROID THERAPY

DECADRON—the new and most potent of all anti-inflammatory corticosteroids—is remarkable for its **virtual absence of diabetogenic effect** in therapeutic doses.

Decadron*

DEXAMETHASONE

to treat more patients more effectively

In clinical trials with some 1,500 patients glycosuria was noted in only two, transitory glycosuria in another two, and flattening of the glucose tolerance curve in one. There were no instances of aggravation of existing diabetes, no increase in insulin requirements. Patients whose diabetes was severely aggravated on prednisolone showed good tolerance when transferred to DECADRON.

MORE patients can be treated with DECADRON than with other corticosteroids, because in addition to being practically free of diabetogenic activity, therapy with DECADRON is also practically free of sodium retention, potassium depletion, hypertension, edema and psychic disturbances. Cushingoid effects are fewer and milder. DECADRON has not caused any new or "peculiar" reactions, and has produced neither euphoria nor depression, but helps restore a "natural" sense of well-being.

*DECADRON is a trademark of Merck & Co., Inc., ©1958 Merck & Co., Inc.

MSD **MERCK SHARP & DOHME**
DIVISION OF MERCK & CO., INC., PHILADELPHIA 1, PA.

Doctors are generally agreed that the best hope of saving lives from cancer is early detection and prompt, proper treatment. Great progress has been made in the last ten years: the saving now of 1 in 3 compared with 1 in 4, as more and more people are seeing their doctors **in time.**

But with present knowledge and existing facilities, it is possible **today** to save **1 in 2** cancer patients. This is the target of the American Cancer Society's professional and public education programs.

The Society offers doctors a variety of free services: **Literature:** two bi-monthly magazines; **Films:** 200 available on loan, including a series of kinescope films covering practically every clinical phase of cancer; **Slides:** (In color) Characteristic early lesions in sites of greatest incidence; **Exhibits:** for medical meetings and conventions, on special aspects of diagnostic and therapeutic problems.

In its public education program, the Society uses every effective communication medium to urge people to have annual health checkups and to go to their doctors promptly at the appearance of a danger signal.

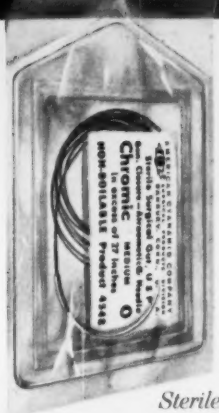
The challenge will be met. As more and more doctors' offices become "cancer detection centers," and as more and more people see their physicians regularly, the closer will come the day when half of our cancer patients will be saved. The know-how for saving the remaining half is still being sought in our research laboratories. Ultimately that challenge, too, will be met.

AMERICAN CANCER SOCIETY

SAFER *here...*

because it's

SAFEST *here!*

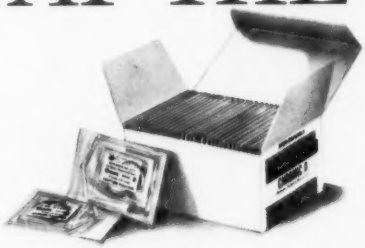


Sterile Strip Pack Sutures

*D&G SURGILOPE SP**

*Trademark

NOW—CHECK CROSS-CONTAMINATION AT THE SUTURE LEVEL!



ELIMINATE ALL JARS & SOLUTIONS WITH NEW INDIVIDUALLY PACKAGED D&G SURGILOPE SP SUTURES

With exclusive D & G *double-envelope* strip pack sutures each sterile, sealed inner envelope is individually protected until the actual moment of use! Bulk storage in jars and solutions—with all its accompanying uncertainties—is outmoded. A new standard of safety at the suture level is established.

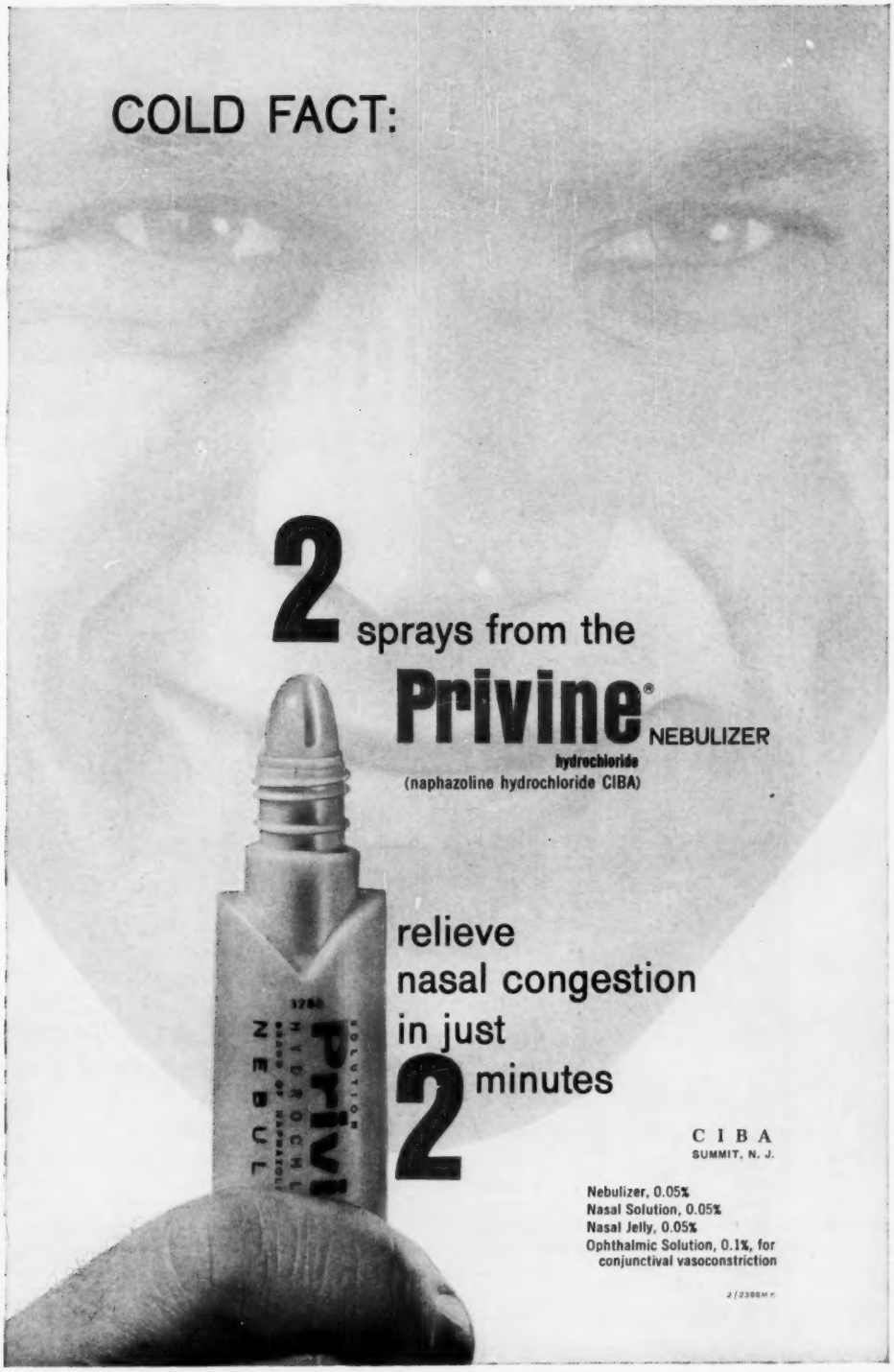
Now available in a complete suture line—absorbable and non-absorbable!

CYANAMID

AMERICAN CYANAMID COMPANY
SURGICAL PRODUCTS DIVISION
NEW YORK, N. Y.

Sales Office: Danbury, Connecticut.

Producers of Davis & Geck Brand Sutures and Vim® Brand Hypodermic Syringes and Needles.
Distributed in Canada by: Cyanamid of Canada Limited, Montreal 16, P.Q.


COLD FACT:
2 sprays from the
Privine® NEBULIZER
hydrochloride
(naphazoline hydrochloride CIBA)
relieve
nasal congestion
in just
2 minutes
CIBA
SUMMIT, N. J.
Nebulizer, 0.05%
Nasal Solution, 0.05%
Nasal Jelly, 0.05%
Ophthalmic Solution, 0.1%, for
conjunctival vasoconstriction
Privine
NEBUL

clinical report[1]

on the use of

DESITIN® OINTMENT

in

BURNS

in 246 patients

- **in first degree burns** 98.88% treated with cod liver oil ointment (Desitin) were completely healed in ten days, in contrast to only 85% of the control group.
- **in second degree burns** 98.18% were healed with Desitin completely in fourteen days, only 85.61% of control group.
- **in third degree burns** all patients treated with Desitin Ointment healed in a gratifying manner in 2 to 4 weeks.

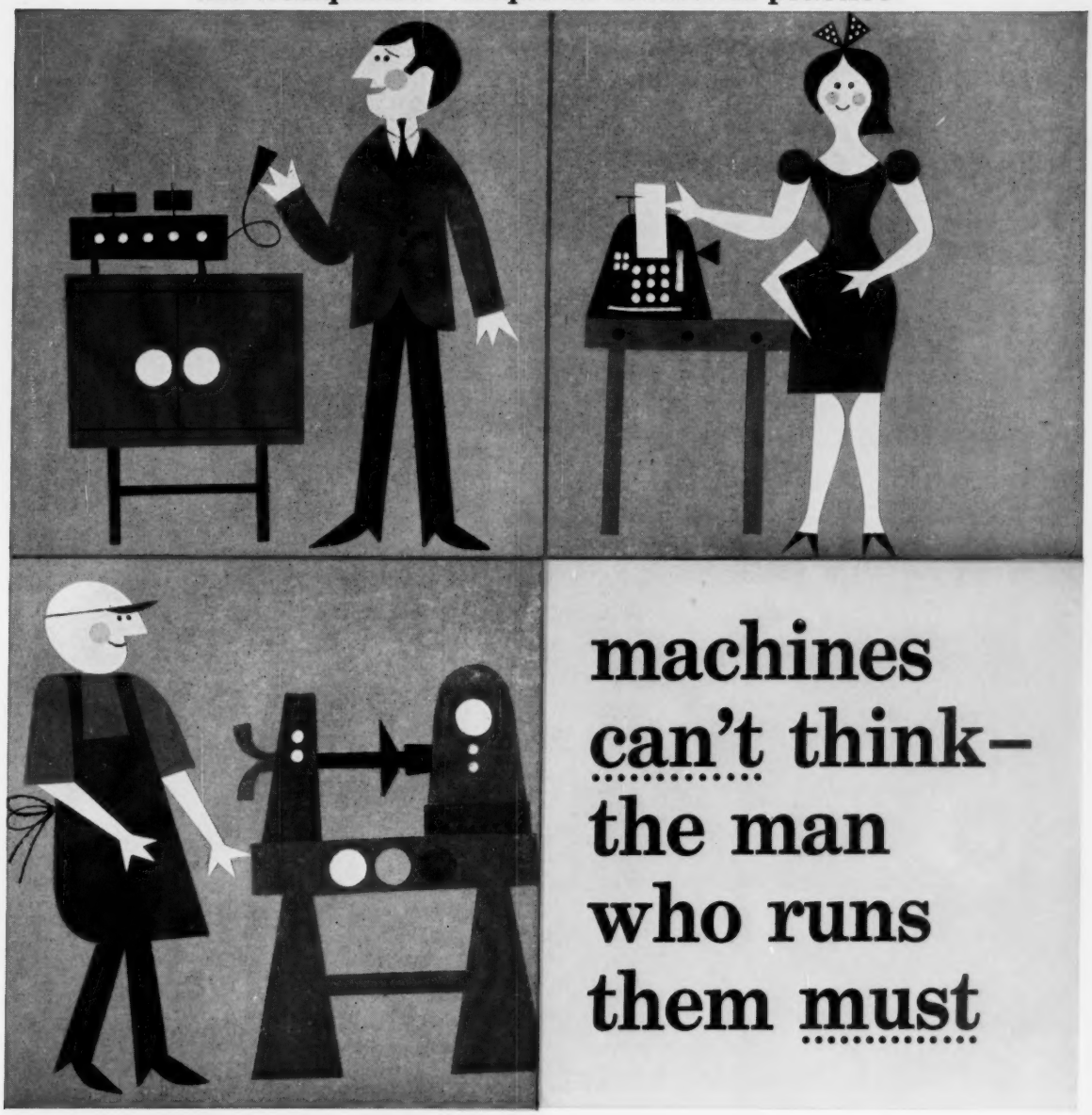
Desitin Ointment helps achieve "early, clean and healthy healing" in traumatic and infected wounds, burns, abdominal fistulas, pressure sores and ulcers, pilonidal cysts and anorectal ulcerations[1] with minimal scarring.

1. Grayzel, H. G. and Schapiro, S.: Western J. Surg. 64:558, 1956.

samples *and complete reprint on request.*

DESITIN CHEMICAL COMPANY
812 Branch Avenue, Providence 4, R. I.

the tranquilizer unique in industrial practice



machines can't think– the man who runs them must

ATARAX®

(brand of hydroxyzine)

Relieves anxiety without impairing judgment. With ATARAX, the employee being treated for emotional disturbances "retains full consciousness . . . but his reactions have become those of a completely balanced individual."[2]

ATARAX is safe
even in amounts several times the average therapeutic dose.[3]

"is especially well-suited for ambulatory neurotics who must work, drive a car or operate machinery."[1]

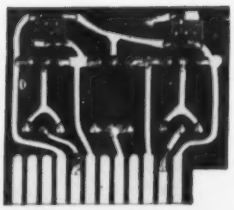
Dosage: Adults, one 25 mg. tablet or 1 tbsp. Syrup q.i.d. Children, 1 or 2 10 mg. tablets, or 1 or 2 tsp. Syrup t.i.d.

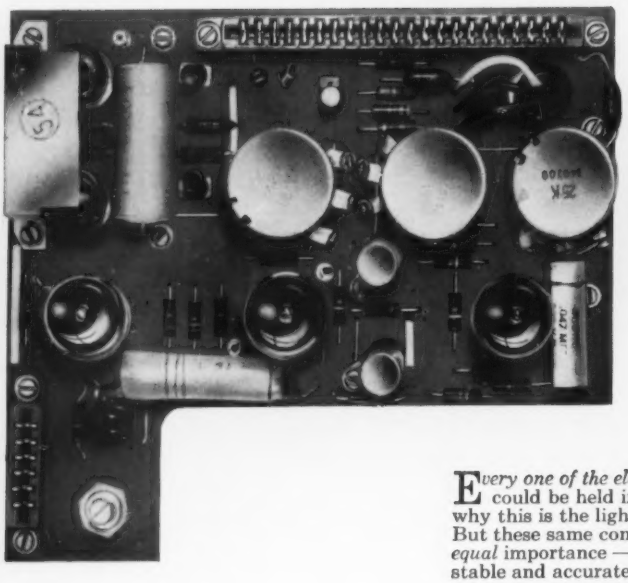
Supplied: Tiny 10 mg., 25 mg., and 100 mg. tablets, bottles of 100. Syrup, pint bottles. Parenteral Solution, 10 cc. multiple-dose vials.

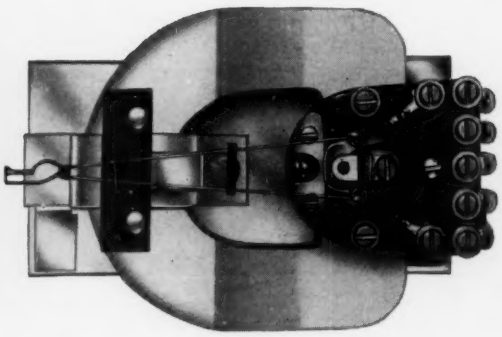
References: 1. Ayd, F. J., Jr.: New York J. Med. *57*:1742 (May 15) 1957. 2. Bayart, J.: Presented at the International Congress of Pediatrics, Copenhagen, Denmark, July 22-27, 1956. 3. Cohen, S.: Am. Pract. & Digest Treat. *8*:946 (June) 1957.

New York 17, N. Y.
Division, Chas. Pfizer & Co., Inc.
Science for the World's Well-Being

They've put cardiography on the road . . . *with accuracy*







Every one of the electronic components used in a Visette electrocardiograph could be held in your two hands — dramatically demonstrating why this is the lightest, most compact ECG in existence today. But these same components would also prove something else — of *equal* importance — about the Visette: why it can *"take it"*, and *remain* stable and accurate, after hundreds of trips to and from your office.

As you looked at these examples of completely modern electronics used in the Visette, you would see numerous *transistors* — rugged, miniature, solid devices which do many of the jobs vacuum tubes do, but with the advantages of much greater durability, preferable electrical characteristics in certain applications, and an extremely long operating life. You'd also see wiring which was *printed* on thin, tough phenolic panels — in place of hundreds of separate pieces of wire; such connections, of course, can't shake loose under constant jarring — and they also make possible "building block" circuitry in the Visette with separate, easily accessible plug-in panels.

And similar advantages in greater ruggedness, longer life, better performance or smaller size would be found in other Visette elements. *Each one was chosen for the contribution it could make in achieving a smaller, lighter, more rugged ECG — without sacrificing accuracy.* Together, they become part of an electrocardiograph offering unequalled operating convenience and portability. More than 3000 doctors today know this from their own experience — in using a Visette in their own practices.

Descriptive literature, "Questions and Answers" on the Visette in handy folder form, or details of the Sanborn 15-day Test-and-Return Plan available on request. Address "Inquiry Director."

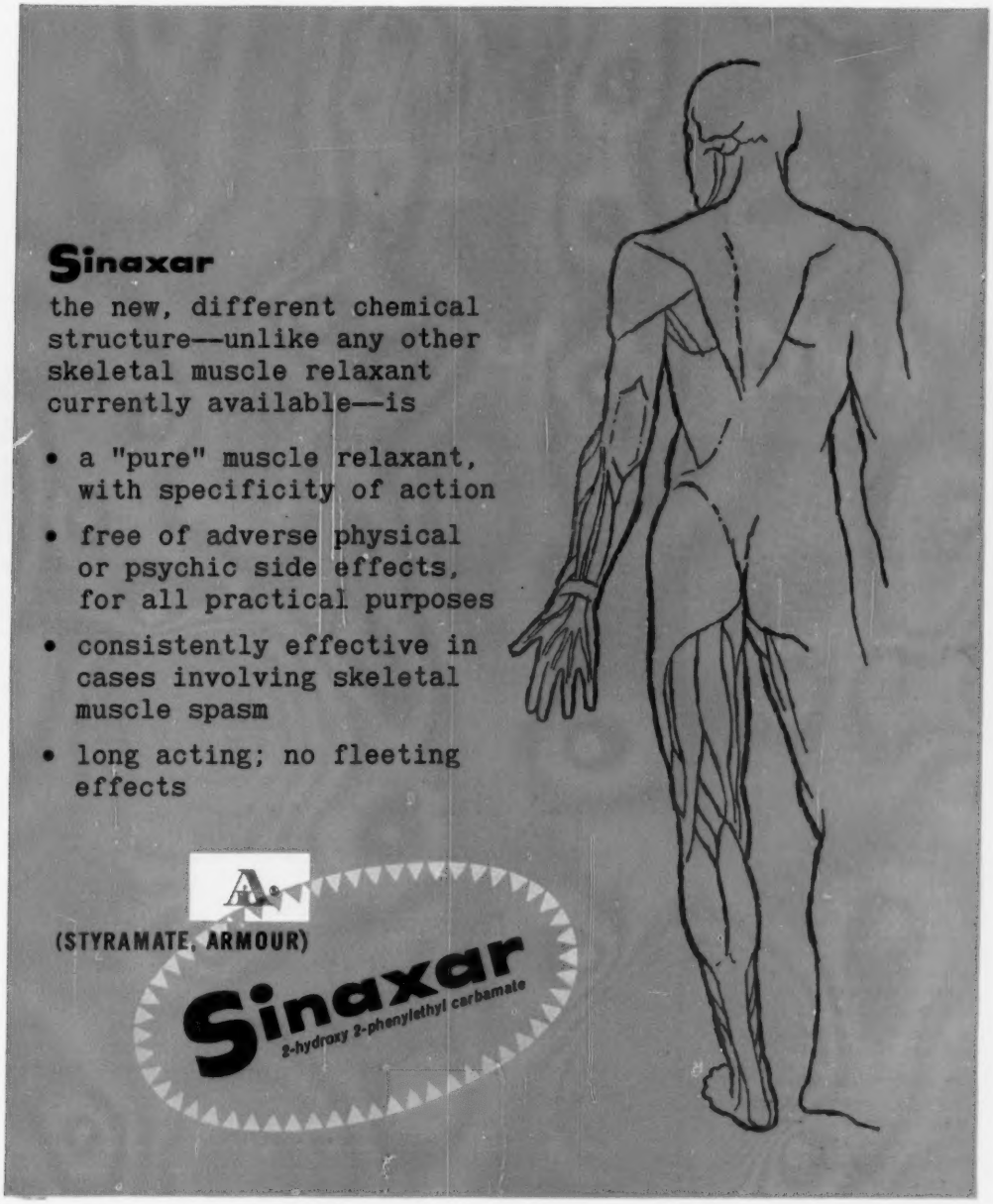
Model 300 Visette electrocardiograph, $625 delivered, continental U. S. A.

SANBORN COMPANY

MEDICAL DIVISION 175 Wyman Street, Waltham 54, Massachusetts

DISAPPOINTED with skeletal muscle relaxants that cause GI distress, drowsiness, and dizziness.....

?


Sinaxar
the new, different chemical structure—unlike any other skeletal muscle relaxant currently available—is
• a "pure" muscle relaxant, with specificity of action
• free of adverse physical or psychic side effects, for all practical purposes
• consistently effective in cases involving skeletal muscle spasm
• long acting; no fleeting effects
(STYRAMATE, ARMOUR)
Sinaxar
2-hydroxy 2-phenylethyl carbamate

ARMOUR PHARMACEUTICAL COMPANY • KANKAKEE, ILLINOIS / *a leader in biochemical research*

at
last
immunity
to
poison ivy
and
poison oak

to keep workers "on the job" with

AQUA IVY, AP®

alum-precipitated pyridine-ivy extract suspended in saline solution

During 14 years of extensive trial and use, Clinicians have reported:

AQUA IVY PRODUCED GOOD TO EXCELLENT RESULTS —up to 93% of cases[1-6]

AQUA IVY IS EASILY ADMINISTERED—SLOWLY ABSORBED

"In our experience the alum-precipitated pyridine-ivy suspension in saline solution (Aqua Ivy) is superior to either the alcohol/ether or the oil resorption materials. This is because of the ease of its administration, its concentrated dosage, and its more effective clinical results along with lessened possibility of exacerbations of symptoms. The alum-precipitated material is slowly absorbed . . ."[2]

No pain upon injection which is given subcutaneously with a ¼ inch 26-gauge needle.

AQUA IVY IS NON-TOXIC AND NON-IRRITATING

In 121 cases ". . . no incidence of nephritis or exacerbation of dermatitis . . . even when Aqua Ivy was administered to children as young as 2 years of age."[3]

"All of the patients accepted the outlined schedule without experiencing either local or systemic reactions."[1]

"The alum-precipitated pyridine-ivy product appears to be non-toxic."[2]

No dermatitis secondary to accidental contact of Aqua Ivy with the skin.

How Supplied:

In a combination package containing one 5 cc. vial of a 1:50 dilution (0.3 mg./cc.) and one 10 cc. vial of a 1:5 dilution (3.0 mg./cc.) (administration sufficient for at least 3 patients).

References:

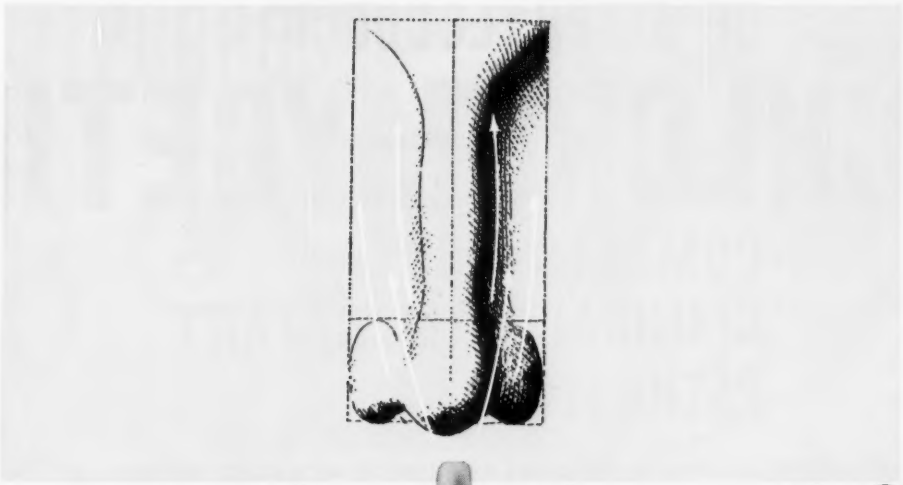
1. Gaillard, G. E.: J. Allergy 21:55, 1950
2. Gaillard, G. E.: New York J. Med. 58:14, 1958
3. Passenger, R. E., Spain, W. C. and Strauss, M. B.: J. Allergy 27:409-423, 1956
4. Neidorff, H. A.: Personal Communication
5. Fontana, V. J.: GP 10:47, 1954
6. Strauss, M. B. and Spain, W. C.: J. Allergy 17:1-10, 1946

Also available as AQUA IVY, AP® TABLETS for oral prophylaxis, in bottles of one hundred tablets of 0.6 mg. each. Each tablet contains 0.6 mg. dry alum precipitated pyridine-ivy.

Literature on request— WRITE TO DEPT. F

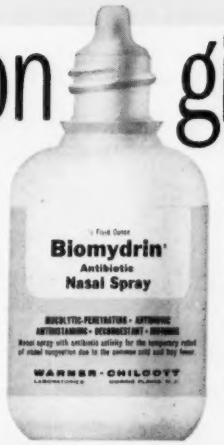
SYNTEX CHEMICAL COMPANY, INC.

New York 16, N. Y.



penetration gives relief

Penetration is the prerequisite for sound intranasal therapy. Thonzonium bromide, an exclusive mucolytic agent with unusual penetration-promoting properties, causes prompt dispersion of mucoid secretions and speeds medication to the site of irritation. Deep infiltration also allows the therapeutic agents of Biomydrin to remain active for prolonged periods. Biomydrin lets the patient breathe easily again.



Lasting relief of rhinitis or sinusitis is usually obtained in minutes with Biomydrin. Phenylephrine shrinks nasal mucosa; antibacterial neomycin and gramicidin fight infection; antihistaminic thonzylamine relieves itching and sneezing.

Supplied in 1/2 oz. plastic atomizer and 1/2 oz. bottle with dropper. Also available: Biomydrin F Nasal Spray, containing hydrocortisone alcohol 0.02%, for severe edema and inflammation. In 1/2 oz. plastic atomizer.

Biomydrin®

nasal spray/drops

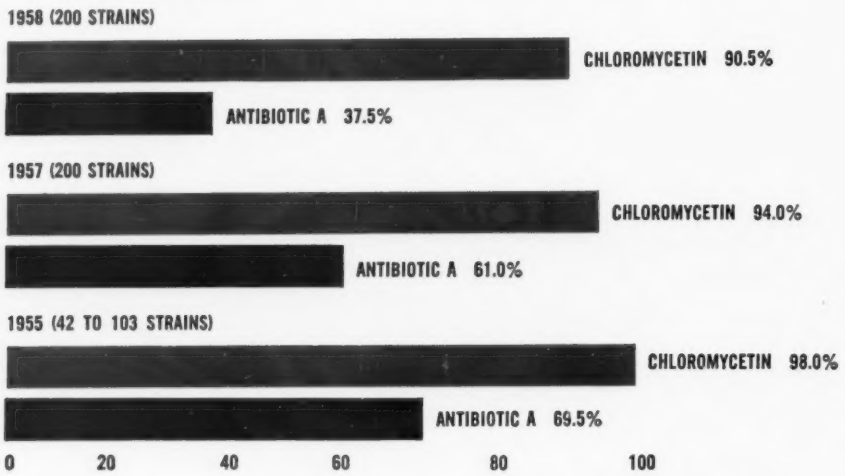
WARNER CHILCOTT

EFFECTIVE AGAINST MOST STRAINS OF STAPHYLOCOCCI

CHLOROMYCETIN®

COMBATS MOST CLINICALLY IMPORTANT PATHOGENS

IN VITRO SENSITIVITY OF PATHOGENIC STAPHYLOCOCCI TO CHLOROMYCETIN AND TO ANOTHER WIDELY USED BROAD-SPECTRUM ANTIBIOTIC FOR 1958, 1957, and 1955*



*Adapted from Holloway, W. J., & Scott, E. G.: *Delaware M. J.* 30:175, 1958.
In this study CHLOROMYCETIN and Antibiotic A were used in identical strengths of 5 mcg.

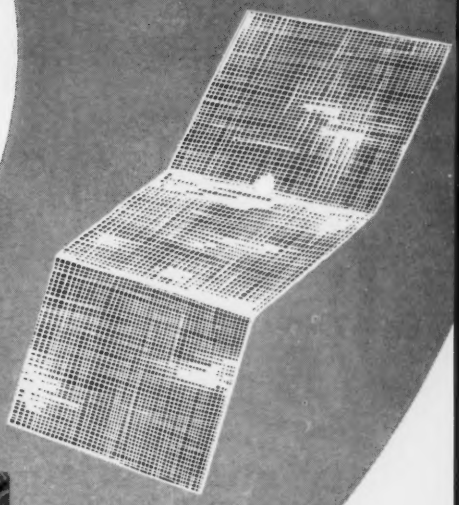
CHLOROMYCETIN (chloramphenicol, Parke-Davis) is available in a variety of forms, including Kapseals® of 250 mg., in bottles of 16 and 100.

CHLOROMYCETIN is a potent therapeutic agent and, because certain blood dyscrasias have been associated with its administration, it should not be used indiscriminately or for minor infections. Furthermore, as with certain other drugs, adequate blood studies should be made when the patient requires prolonged or intermittent therapy.

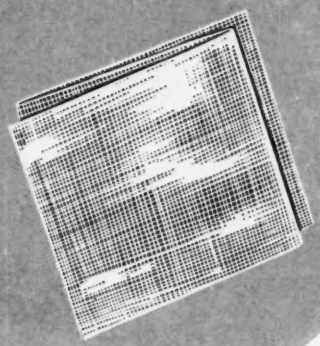
PARKE, DAVIS & COMPANY · DETROIT 32, MICHIGAN

71459

The NEW DUAL PURPOSE



VASELINE
PETROLATUM GAUZE U. S. P.
STERILE
3 x 3 PAD, opens to 3 x 9 INCHES
Fine Mesh Absorbent Gauze (44/36)
Impregnated with White Petrolatum
CHESEBROUGH-POND'S INC.
NEW YORK 17 N.Y.
UNOPENED ENVELOPE MAY BE AUTOCLAVED OR COLD-SOAKED
TEAR HERE



3″ x 9″ STRIP

Shorter length ends waste on small area wounds. New Z-fold insures perfect graft takes. Guaranteed sterile at time of use.

3″ x 3″ PAD

Three-ply, fine-mesh gauze, lightly impregnated — for use in physician's office, industrial medical department, first aid.

6th SIZE of VASELINE® PETROLATUM GAUZE

Now supplied in:

1/2″x 72″	3″x 18″
1″x 36″	3″x 36″
3″x 3″/ 3″x 9″	6″x 36″

Sole Maker:

CHESEBROUGH-POND'S INC.
Professional Products Division
New York 17, N. Y.

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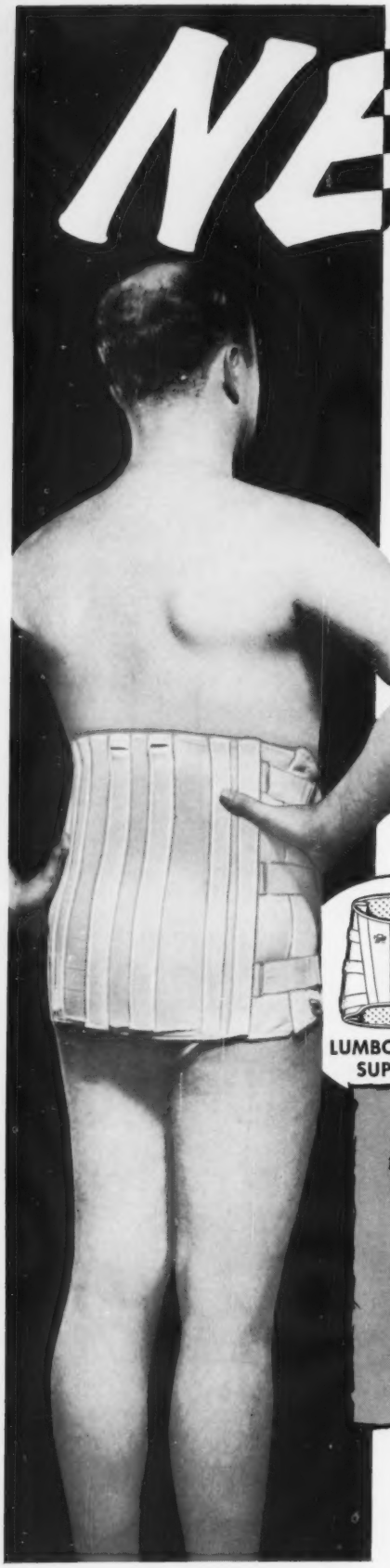

NEW

A support so comfortable your patients are sure to wear it.

Pi Peer
GOLDEN CROWN

LUMBO-SACRO SUPPORT

with unique new compression control

- Revolutionary 3-layer materials. Made of soft, resilient **perforated foam rubber** covered on inside next to body with luxurious **tricot** and on outside with tough, durable **dacron.**
- Independent 3-strap compression control. No laces to wear out. Allows pressure to be concentrated exactly where needed for maximum support.
- 14-inch height supports both lumbar and sacral regions as a unit.
- Removable form-fit steel back stays.
- Air cooled. Hundreds of tiny perforations allow air to circulate through support to body.

FRONT VIEW

LUMBO-SACRO SUPPORT

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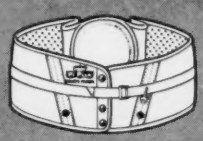

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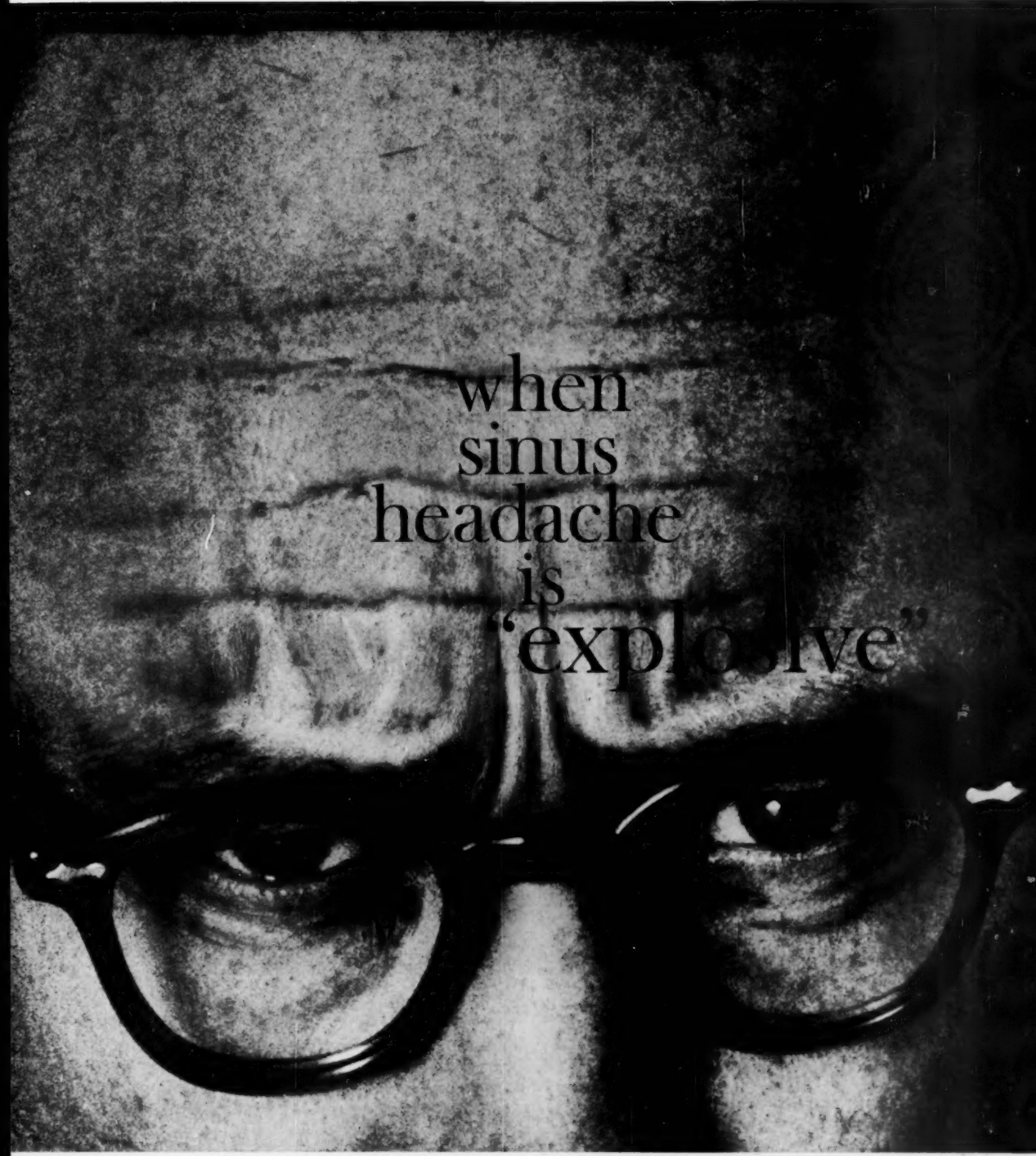

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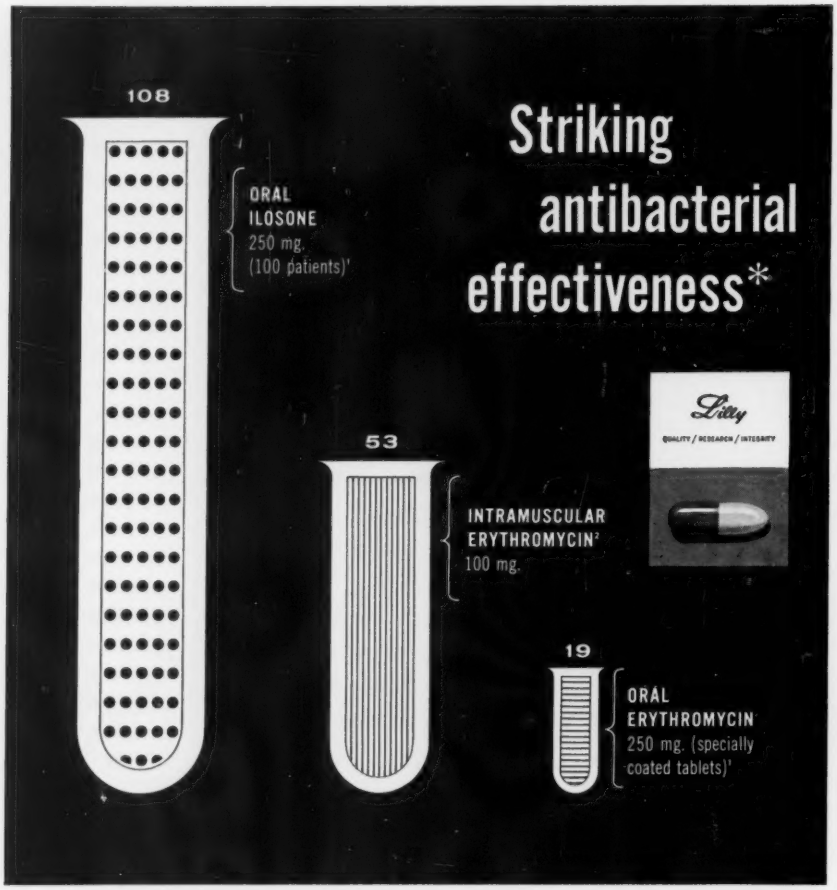

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1. Griffith, R. S., *et al.*: Antibiotic Med. & Clin. Therapy, *5*:609 (October), 1958. Note: Peak levels with the oral erythromycin tablets (thirty-three dilutions) were not observed until four hours after administration. 2. Data from Griffith, R. S.: Antibiotics Annual, p. 269, 1954-1955.

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Government's Role in

PREVENTIVE MEDICINE

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Man always has been at war with his environment. For hundreds of centuries, he was fully at its mercy, but quite recently he began to understand some of these devastating environmental forces and eagerly has sought techniques for protection.

Gradually, groping man came to realize that he as an individual or alone as a member of a community, could not completely master his environment. He learned that greater gains were made when his group moved in concerted effort. Out of this wisdom came his first faint grasps of a role for government in his struggles with his environment. In time there emerged a measure of public health and preventive medicine under the aegis of government — not government as the dictator, but government as the source of concerted community action.

Although in loose fashion the terms "public health" and "preventive medicine" are likely to be accepted as synonymous, they are quite different in origin. Public health, whether officially or through private agencies, foremostly is concerned with the prevention and eradication of disease in the entire community. Thus there exists a community responsibility for the promotion and protection of the health of its people as a group. This is the basic governmental role in preventive medical services.

Presented at Lake Logan Conference, Lake Logan, North Carolina, May 1958.

Preventive medicine, on the other hand, early was conceived to deal only with the individual for the purposes of improving and protecting the health of that individual. Primarily the responsibility for utilizing preventive medical measures was vested in the individual or in the family.

Public health's greatest contribution to the health of the community has been to control communicable disease through water purification, food sanitation, pasteurization of milk, etc.; measures by which all members of the community benefit. Gradually, as it became recognized that every child is a community asset, organized governmental public health efforts were expanded into child health protection. With the added recognition of the value of all individuals to the community, governmental public health activities have embraced and developed preventive medical services for individuals. Primarily, these preventive medical services are based on the premise that such actions are advantageous for the community as a whole.

Slowly, and perhaps undesirably, the distinction between public health and preventive medicine has disappeared and the two terms have

merged, although the term "official" usually is restricted to public health and not extended to preventive medical services. Yet endless activities properly categorized as preventive medicine are carried out by official and unofficial public health agencies under the banner of public health.

Many diseases are controlled by a combination of public health and preventive medical techniques and services. Today, this is the dominant pattern of governmental health agencies' varied programs and services. It is this all-embracing concept of community public health-preventive medical activities that here engages attention.

The total preventive medical-public health programs gradually are changing man's status from environmental servitude to mastery of his environment. Perhaps man will never achieve that Utopia, but he is well on the way. Until recently, preventive medicine had been only an instrument for applying previously known measures for disease prevention. Now, however, the technical knowledge in public health and preventive medicine is so large that they are becoming positive creative forces in producing new developments for the benefit of society. Owing solely to these successful developments in disease control, new patterns of morbidity and mortality are emerging quite unrelated to the previously dominant environmental factors such as changes in the standard of living, housing and economic or social progress. Today, as an instrument of social progress, public health and preventive medicine are on a par with other social forces.

Government at federal, state and local levels has a vital role to play in preventive medical services. In our democracy the federal role is largely that of research, training and leadership. It has no responsibility for direct application of preventive medical services to and for the people except in emergency situations. Desirably, that is the area of responsibility of state and local governments. Largely through the Public Health Service, much research is carried on in governmental facilities and more is promoted through research grants to private institutions. Today 60% of private health research work is financed by federal grants.

Under the Pure Food and Drug Act, the federal government is responsible for setting and enforcing standards of purity and potency for food, drugs and biological products sold to the public. Obviously, no individual is in a position to protect himself in this domain. The functions of the Food and Drug Administration serve as an unchallengeable example of the benefits of governmental participation in public health programs. Many other federal governmental agencies likewise are performing in the realm of public health measures clearly beyond the abilities of individuals and communities.

In addition to research, standards and some enforcement, the federal government supports much training of personnel, particularly from state and local health departments. Also, extensive consultation services are provided to state and local governmental public health agencies.

Grouping these areas of function into (1) research and standards, (2) training and consultation and (3) direct services to people, we find the federal goverment is not heavily involved in direct preventive medical services to people, except in catastrophes.

State governmental preventive medical services are directed to these same three broad areas — research, training and consultation, and services, but with different emphasis. Only a few state governments engage in widespread research within their health departments. Likewise they expend less state funds in direct training than does the federal government, but they provide more consultation and direct preventive medical services to people.

In the area of immediate concern to us (industrial health) only 20 local health departments of our largest communities offer services in industrial health and hygiene, but nearly every state government provides such services.

Industrial health and hygiene, whether applied by industry itself or by governmental institutions, introduces a further and excellent example of the semantic confusion that attends the situation. Beyond debate, the medical and engineering procedures and measures — industrial hygiene — are applied to work environments on a mass basis. By precise definition, industrial hygiene in its usual aspects should be categorized as "public health." Consistently that term is avoided as inapplicable, just as all of occupational health vigorously contends that preventive industrial medical programs are not to be included under "medical care" programs.

Local governmental preventive medical services are confined principally to services to people with few local funds being expended on personnel training and research. It is in the local community that most governmental preventive medical services are brought to people. In addition to the far spread public health sanitation services, many personal preventive medical services are available — prenatal clinics, well baby clinics, school health services, immunizations, as well as specific disease case finding, programs for various chronic diseases such as tuberculosis, diabetes, venereal disease, etc.

With the reduction of morbidity and mortality from communicable diseases and the remarkable reduction of infant and childhood mortality, greater numbers of people are reaching adult life. The pressing health problems of people no longer are centered upon the communicable

diseases, child health and traditional environmental diseases. Today's critical health problems are in the fields of adult health and new environmental hazards largely developing out of our industrial society. How to detect early the insidious development of a chronic degenerative disease, a mental or occupational disease, and arrest it before the inevitable toll of disability and infirmity ensues, is the dilemma of adult health maintenance.

Enormous shifts in focus characterize public health and preventive medicine programs. Older requirements never fully disappear. Puerperal sepsis of the frequency that drove Semmelweis insane no longer is a concern but the potentialities of puerperal sepsis linger. Ninety per cent of physicians never saw a case of leprosy, yet there is no disposition to underestimate that disease. The demands of newness run to the dilemmas of an aging society and to the increasing affronts of chemical and physical agents in the environment. Despite the shifts in focus of public health and preventive medicine it does not appear that this total newness, combined with the demands of the old, in any degree lessens the necessity that government continue its participation in public health and preventive medicine measures. There is slight hope that government ever will accomplish this mission and leave the field to the individual. Man is a community being and this very concept implies regulation and group action.

Against this background now are laid some current pertinent public health situations, old or new. First in prominence are the rising environmental hazards in industrial communities requiring evaluation of their health significance. When this and a few other items have been presented, it will become possible to assay the future role of governmental preventive medical services in meeting these situations.

Community Environmental Hazards

According to McCord, every morning in the United States alone, 7,000 more mouths clamor for food than clamored yesterday. In a little while, harried boards of education must find two and a half million new schoolroom seats every year for these newcomers. The country's elementary and secondary school population of 38 million today already represents an increase of almost 25% over just four years ago. Housing and employment for this expanding population inevitably will become enormous problems. This population surge rapidly is adding to the adult population, so increasingly the need for adult health maintenance grows rampant.

Let us next examine the community as a patient. McGavern repeatedly has called attention to the pressing need for public health fully to recognize the community as a single unit, the body corporate. This single entity needs its ills scientifically diagnosed and treated. A basic job for public health is not merely to be cognizant of, but to understand fully the social, governmental and legal structures of our communities. Also, clear understanding of the various ethnic groups, their religious, nutritional, behavioral and educational patterns is requisite for public health's orderly progress. With this broad understanding, public health becomes prepared scientifically to diagnose the ills and institute scientific measures to rectify community ailments. Sick communities are as desperately in need of scientific diagnosis and treatment of their maladies by understanding and scientifically trained public health personnel as is an ill individual in need of the services of a personal physician and hospital.

Water Pollution

Four of the mounting community health problems are water pollution, air pollution, accidents and poor nutrition. Water pollution is not alone bacteriologic. Perhaps more significantly, chemical wastes from industry and households increasingly are rendering much water unfit for use. Chemical pollution is intensifying the problem of finding sufficient water supplies for the increased population. "Water for survival" is a new cry in the United States. An alarming shortage of water is rapidly developing and we must devise means of using water over and over as well as preventing types of pollution that make reuse impossible.

As population and industry increase, water use waxes and pollution spreads. What we face, therefore, is a vicious cycle — more water needed to support more activity, to produce more wastes, to pollute more water. To break the cycle, we must employ a variety of water conservation measures. Of these, pollution abatement is essential to permit reuse of the water as streams flow from city to city. Few specific diseases are known to follow chemical water pollution. Mottled enamel and chronic fluorosis from excessive fluorine in water, and blue babies from increased nitrates are about the only examples. Nonetheless, other insidious adverse health influences from chemical pollutants cannot be ruled out categorically. At the moment, the mammoth difficulty with water is not pollution, evil as that may be, but the harassing task of providing a sufficient volume of water to an explosive population, to an explosive industrial expansion and to concomitant community requirements.

Air Pollution

Industries, when faced with disposal of industrial wastes (and not wanting or not being permitted to dispose of those wastes in streams

thus adding to water pollution), frequently have thrust them out their stacks into the air. Thousands of tons of particulate matter, gases and vapors daily are discharged into the atmospheres of our industrial communities. Much of the particulate matter is inert and, although a nuisance, does not in itself constitute a significant hazard to health. In Great Britain, industrial communities frequently have 500 to 2,000 tons of particulate matter per square mile, per year, while rural areas have only 10 to 100 tons of particulate matter per square mile, per year. Only recently being explored is the role of the sub micron sized particles acting synergistically with toxic gases.

The chemicals, gases, and vapors present quite a different problem. What photo-chemical interreactions take place among these chemicals in the air, and the ultimate fate of these chemicals, are little understood. Episodes of acute air pollution have killed thousands, yet the health effects of continuous low-grade, chronic air pollution remain an enigma. The possible cumulative toxic effects are entirely unknown. However, future development of our growing metropolitan centers surely depends upon solving the air pollution perplexities. It is forecast that engineers are likely to evolve efficient air pollution control techniques long before physicians, epidemiologists and biologists clearly demonstrate the final significance to health of low-grade chronic air pollution.

Nutrition

With thousands of new mouths to feed, it will become increasingly difficult to provide adequate balanced diets for all. This will derive not only from a shrinking of total food supplies, but from inability of our prefabricated diet to supply all the essential proteins, amino acids, vitamins and minerals. The threat is magnified by mass production, prefabrication and packaging of many food products so that the home kitchen becomes merely a warming station. To date, the food processors and packagers rarely are concerned with vitamin, protein and essential amino acid content or balance between protein, fat and carbohydrate. The potentials of this situation are being enhanced by the apparent importance of diet upon the development of, or early precipitation of, metabolic and degenerative diseases.

Education of all our people, particularly the food packing industry and the housewife, concerning the influence of diet upon health and disease needs renewed emphasis. As more specific knowledge develops, techniques for improving nutrition by community action will come. Already we have added vitamins to butter, cereals, bread and even milk in an effort toward community control of avitaminoses.

Accidents

An exceedingly large and growing community health matter is disability and death from accidents. Industry has so reduced these risks that the majority of workmen are safer today at work than at home or on the highway. Injuries and deaths on the highway are a mounting national disgrace. Preventive medicine belatedly is making a few efforts to reduce motor vehicle accidents, but it needs to do much more. Critical analysis, epidemiological studies and the development of methods of prevention are requirements already overdue. Motor vehicle accidents cause much suffering, mutilations, disfigurement, disability and death. Yet we callously permit this slaughter to continue unabated. Last year, the motor vehicle accident death toll was nearly 40,000 while over one and a half million were injured. If this continues for the next 10 years, one person in every 15 alive today will have been killed or injured in an auto accident. Since human failure is the major cause of motor vehicle accidents, their prevention is a critical assignment to preventive medicine's capabilities.

Public Health's Preventive Medicine

Few community or group controls of personal, noncommunicable diseases exist. Dental caries may be strikingly decreased in children by the fluoridation of community water supplies and goiter can be prevented by adding iodine to salt. Otherwise, attempts to prevent avitaminoses by adding vitamins to butter, cereals, bread and milk are about the only group activities yet developed by the community to curb personal noncommunicable afflictions.

Lacking knowledge of the specific etiology of a host of chronic degenerative and metabolic diseases, we are at a loss to develop specific preventive measures and therefore have none. However, early detection has much to offer, particularly in preventing disability; thus the increasing importance of adult health maintenance services for all individuals.

The realization that a distinction may be made between optimum health and the absence of illness may be considered one of the more recent advances of preventive medicine. Individuals presenting no symptoms or obvious signs of disease may nonetheless be harboring the seeds of an insidious, even catastrophic, but at present asymptomatic illness. While these seeds are maturing, but before overt disease is manifest and medical aid is sought, they may reduce the individual's working efficiency, productivity, sense of well-being and adjustment.

Although preventive medicine has made hopeful attempts to glorify the well person instead of dosing the ailing individual, most practicing

physicians still largely are concerned with the sick. As a result, well individuals frequently do not benefit from vast stores of preventive medical knowledge either because the individual does not feel a need to visit his health facilities or the busy physician lacks time to work with apparently well individuals.

The lack of health conservation services for adults is in remarkable contrast to the excellent job being done by the pediatricians and health departments in child health. With school health examinations and most mothers taking babies to well baby clinics or private pediatricians for regular examinations, today many pediatricians report they are spending over half their time seeing well babies and children. Child health maintenance, plus good control of communicable diseases, has resulted in the remarkable increase of about 30 years in life expectancy at birth during the past century. However, despite our miracle drugs and brilliant surgery, for the adult no comparable progress has been made. For the age 40 adult life expectancy has been increased only about 4.5 years in the past century.

No thinking person expects man to live indefinitely, but calculations based on the life span of other animals indicate a possible life span for man of 125 to 150 years. To achieve this longevity we still must learn how to control many of the disabilities of adult life as we have learned how to control many childhood diseases. Today we have the tools, although largely unused, for practicing more significant adult health maintenance.

Chronic Degenerative Disease

Against the background introduced, let us examine the four areas of mounting health needs of adults; chronic degenerative disease, emotional and mental disease, metabolic disease and occupational disease.

Heart diseases, cancer and arthritis are examples of chronic degenerative diseases that produce vast disability and premature death. Lacking knowledge of the specific etiology of these diseases makes early detection and correction the only protection man has against these disablers.

Early detection means organized adult health services including periodic health examinations for all adults. Industry is taking the lead in supplying these services to a valuable portion of our adult population, industrial executives and workers. The community, through its official health agencies if private efforts lag, is likely to provide adult health services for the remainder of its citizens on the premise that preservation of health and control of chronic diseases is a valuable part of public health's preventive medicine program.

Emotional and Mental Disease

The significance of proper human relations in man's achieving and maintaining optimal health is no longer ignored. These human relations, mental and social components cannot be overlooked, rather they must be considered concurrently with the physical status if man is to achieve maximum well-being, happiness and productivity for himself and for society. Both management and labor are becoming increasingly concerned over the fact that emotional disturbances are responsible for one-third of all adult sickness and absenteeism from work. It makes little difference whether these emotional problems arise from a crisis at home or hostile human relations at work, the disabling effect on the individuals and the loss of productivity to industry and society are the same.

Fortunately, the recognition accorded mental health problems in recent years gives us some advantage as we pass from our present era of mechanization into tomorrow's era of automation. Hopefully, the many individuals requiring help in meeting the new stresses and strains will find adequate mental health resources available in most large communities.

Metabolic Disease

Diabetes is the best known of the metabolic diseases, although variations in metabolism may influence the development of other common diseases such as arteriosclerosis. Diabetes appears to be growing, and in our expanding population will no doubt continue to do so. Early detection again offers our best hope. There will be few protests against the inclusion of diabetes detection as a wholesome item in the communities' public health program.

Occupational Disease

Although many cases of occupational diseases are poorly diagnosed and often missed, even less frequently are they reported as required by law in nearly all states. It is calculated that annually at least 350,000 cases of occupational diseases occur in severity sufficient to cause loss of time from employment. With expanding industry and the avalanche of new chemicals introduced yearly, we must expect even more occupational disease in the future. Generally it is not possible in advance of significant changes in industrial processes to anticipate all possible health hazards. Therefore, much trial and error still goes into these changeovers before dangerous exposures are brought under control. One of the requirements of an adequate industrial hygiene department is the capacity to foresee the perils to health in major industrial process changes and thus to forestall their occurrence.

In reversal of former appraisals, it is observed that the average workman is safer and healthier at his work place than at anywhere else. He is better protected at work than he is in his own home, in his travels to and from work, in his sports and recreation, and far better protected than when he is on vacation.

A vital role already is being played in industry in all aspects of worker health conservation, and notably in the prevention of occupational diseases and in adult health maintenance. It is in no way remarkable that with the fulfillment of all such opportunities and responsibilities, occupational medicine rapidly is emerging as a virile medical specialty.

Comment

As a portion of the many appraisals being made here, there is need to take into account the prospective attitudes of people toward their own health and the health facilities about them. With increased understanding of both functional capacities and the effects of disease processes, a new concept of health is likely to evolve. People no longer will gauge health by the ability to crawl out of bed and apparently be productive. Rather they will inquire whether they are functioning at the optimum capacity of their bodies and minds.

Along with this creative attitude toward health, hopefully, people will demand to know more of the facts and then participate more intelligently in the decisions regarding their individual health. The higher the general level of education and the more general knowledge individuals possess, the more decisions they will make on their personal health. In such a society individuals will not blindly accept ultimatums from either health departments or their personal physicians. Rather they will require facts, and then make their own decisions. After making these decisions they will no doubt act on them more positively. Thus increasing responsibility will devolve upon all practitioners of preventive medical services to redouble their efforts in health education to keep the public informed of developing health events. With this increased understanding will emerge public demand for efficient preventive medical services. If private practitioners do not satisfy this demand, the governmental health agencies, reluctant though they may be, will be compelled to do so.

Health maintenance programs in industry, for that important segment of our population (64 million workers) will continue to grow. With the immense changes about to occur in moving from the era of mechanization into an era of automation more emotional disturbances and mental dysfunctions are likely to arise, although community sponsored facilities for dealing with them are likely to be available in many communities. We need means of early detecting the emotionally disturbed, and simpler, more specific therapy to restore these individuals to normal lives and productivity.

The role of government in preventive medical services is growing. Research in preventive medical services is growing. Research in preventive medicine particularly by the federal government is growing. Vast sums of money and magnificent research facilities are being focused upon cancer and heart disease. Water and air pollution are just beginning to receive research attention from the federal government. The preventive medical aspects of highway accident prevention as yet remain untouched.

In general it may be anticipated that in the future the public will increase its demands upon government at various levels for more and more public health and preventive medical protection, but always predicated upon the belief and controlling tenet that such demands must be for services that the individual cannot acquire for himself. If that governing principle is adhered to, all these demands will become laudable.

Summary

From the beginning of organized community life attended by government, man has looked to his government for various forms of protection that he as an individual could not achieve. Long ago, community man relied upon government to safeguard his water supply and guarantee the purity of his milk and the sufficiency of waste disposal facilities. Soon it became apparent that man must for all time accept from government some degree of participation and regulation in the attainment, conservation and perpetuation of health.

This article indicates the health services that flow from government at federal, state and local levels. Although the patterns and forms of public health have undergone profound alterations in past decades, the number of services consistently has increased. One exception is notable. The attainments in occupational health, apart from research contributions, foremostly have been brought about by industry itself and stands to the credit of private enterprise. Organized labor has become vitally interested in adult health maintenance and can be expected to exert powerful influences in the future.

More and more will be demanded of governmental agencies in implementing public health and preventive medicine measures. Man is finding an increasing, and in truth, endless array of health needs far beyond his capacities as an individual to provide. So long as government lives up to its pact of doing nothing that men apart from government may do for themselves,

then these activities of government — public health — are to be accorded hearty cooperation and unreserved support.

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Law of No Appeal

Hammurabi, king and lawgiver to the Babylonians four thousand years ago, wrote into his code some harsh rules about the practice of physicians. Experience and time eliminated them but the courts and a few attorneys seem bent upon re-establishing a code almost as harsh, financially if not physically. Against much of this there is no protection, and the problem is growing. Mr. C. Joseph Stetler, director of AMA legal department has said, "If the present trend continues and if a physician must become increasingly apprehensive of legal suits, his own defensive instinct will inevitably, in some measure, overcome his humanitarian and professional motivations. Such a doctor will be inclined to give too much time to protecting himself and less to the care of his patient." Recently, for example, the Court of Appeals in the State of New York handed down a decision which awarded the plaintiff $10,000 for physical injury claimed to be sustained at the hands of a physician, and also an additional $15,000 for mental anguish over something which *might* have happened. In another case, against a surgical practice partnership, a suit was withdrawn after the partners had spent many sleepless nights, worried days, and endless hours with attorneys preparing at much expense to defend an unjust suit, which, had it been prosecuted and won by the plaintiff for the amount named, would have taken the entire net earnings of the partnership for the past fifteen years. When, in any one area, one out of four physicians has been served papers as a defendant in a malpractice suit, as is the case in California, the situation approaches the harshness of that in the time of Hammurabi. In Babylon the physician could lose both hands if he lost his case. Destructive possibilities facing the physician today sometimes seem no less effective in their ultimate result. Even more important, in the long run, may be the damage done to the medical care available in this country.

—*Northwest Medicine,* Oct., 1958.

Magnification Techniques in Radiography

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Professor of Radiology, University of Pittsburgh

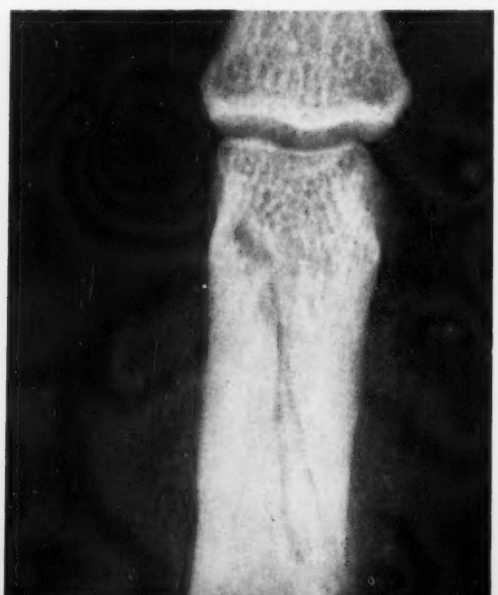
To delineate fine details and to make them more clearly visible it is frequently desirable to have some enlargement of our conventional roentgenograms. Given a good quality roentgenogram, there is a limit to how much detail can be made more apparent by means of an optical lens system such as a magnifying glass. Some method of direct enlargement of detail of the structures would be useful. Such enlarged views aid the roentgenologist in deciding debatable points of variation from the normal. There are many parts of the body in which such features could be more clearly defined, especially in the extremities and in the skull.

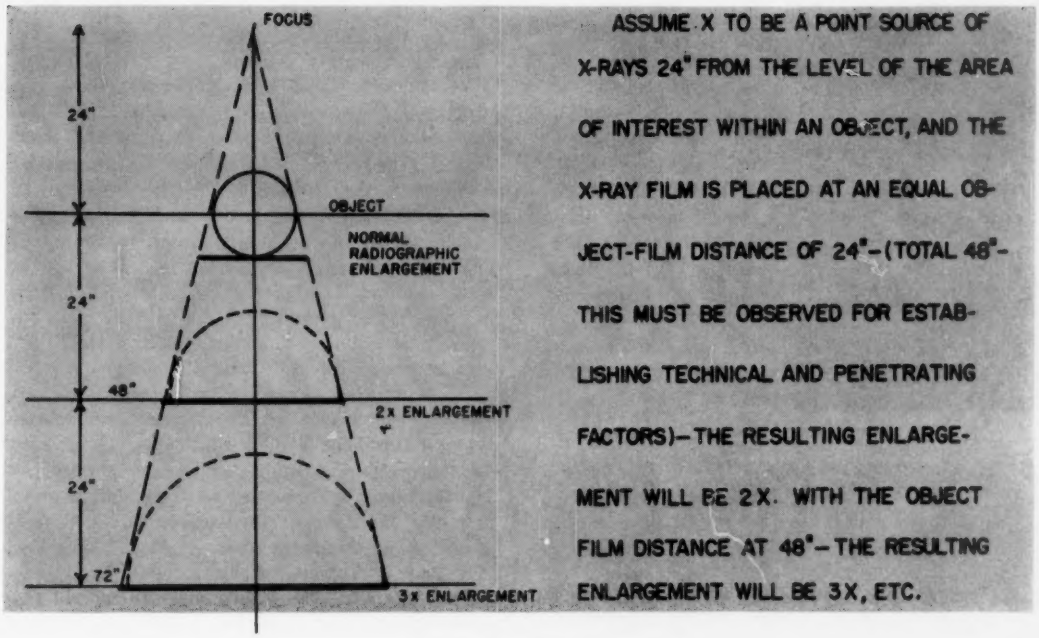
Figure 1

Problems frequently encountered in roentgen diagnosis of fractures are those of the nasal bones and the bones comprising the wrist and ankle joints, as well as the toes and fingers. In Figure 1 is shown a conventional vs three-fold enlargement of a fracture of the nasal bone. It is quite clear in the magnified image which is the fracture line and what are the normal vessel and nerve grooves. In a fracture of the phalanx, where the question of amount of callus present arises, it will be seen (Figure 2) that this is barely perceptible in the usual view but clearly apparent in the enlarged one.

How are such directly magnified images obtained? These depend upon a very fine focal spot on the target of an x-ray tube especially manufactured for this purpose. Such tubes commonly have two focal spots, one of 0.3 mm and another of 1.5 or 2 mm for

Figure 2

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72"
3x ENLARGEMENT
ASSUME X TO BE A POINT SOURCE OF X-RAYS 24" FROM THE LEVEL OF THE AREA OF INTEREST WITHIN AN OBJECT, AND THE X-RAY FILM IS PLACED AT AN EQUAL OBJECT-FILM DISTANCE OF 24"-(TOTAL 48"-THIS MUST BE OBSERVED FOR ESTABLISHING TECHNICAL AND PENETRATING FACTORS)-THE RESULTING ENLARGEMENT WILL BE 2X. WITH THE OBJECT FILM DISTANCE AT 48"-THE RESULTING ENLARGEMENT WILL BE 3X, ETC.

Figure 3

conventional roentgenography with the same equipment. Because of the extremely small source of the x-rays it is possible to increase the distance up to three feet between the part and the film, while varying the focal-part distance (Figure 3). By examining Figure 4 it will be seen how the tiny 0.3 mm focal spot gives very little unsharpness of the images at increased part-film distance as compared with the usual 1 mm focal spot. By varying the focus-object distances and the object-film distances, various degrees of enlargement can be obtained. These variations in focus-object and object-film distances are accomplished by such an arrangement as shown in Figure 5 where the tube can be moved closer to the part and the film placed at measured distances from it. In this example the focus-object and object-film distances are equal and a two-fold enlargement is therefore obtained.

A very useful application of this technique is in enlarging x-rays of other fractures such as the forearm and wrist.

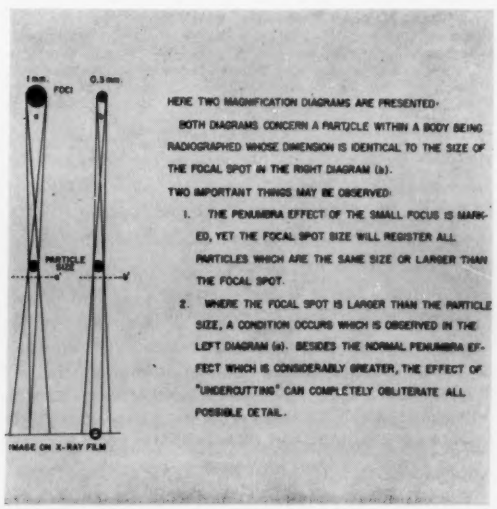
1 mm.
FOCI
0.3 mm.
PARTICLE SIZE
IMAGE ON X-RAY FILM
HERE TWO MAGNIFICATION DIAGRAMS ARE PRESENTED.
BOTH DIAGRAMS CONCERN A PARTICLE WITHIN A BODY BEING RADIOGRAPHED WHOSE DIMENSION IS IDENTICAL TO THE SIZE OF THE FOCAL SPOT IN THE RIGHT DIAGRAM (b).
TWO IMPORTANT THINGS MAY BE OBSERVED:
1. THE PENUMBRA EFFECT OF THE SMALL FOCUS IS MARKED, YET THE FOCAL SPOT SIZE WILL REGISTER ALL PARTICLES WHICH ARE THE SAME SIZE OR LARGER THAN THE FOCAL SPOT.
2. WHERE THE FOCAL SPOT IS LARGER THAN THE PARTICLE SIZE, A CONDITION OCCURS WHICH IS OBSERVED IN THE LEFT DIAGRAM (a). BESIDES THE NORMAL PENUMBRA EFFECT WHICH IS CONSIDERABLY GREATER, THE EFFECT OF "UNDERCUTTING" CAN COMPLETELY OBLITERATE ALL POSSIBLE DETAIL.

Figure 4

Figure 5

In Figure 6 is shown a four-fold enlargement of fractures of the radius and styloid process of the ulna which have been reduced and easily demonstrated to be in perfect postion and alignment. Such a view as this can be made into an excellent slide for projection or for demonstration in a court room. The details in the original four-fold enlargement can easily be seen at 20 to 30 feet, whereas the conventional view requires close viewing.

Figure 6

In the case of fractured carpal bones this technique finds useful application. The photos show a conventional compared with the four-fold enlarged view of a fracture of the capitate bone. Scarcely detectable in the conventional film, it is readily seen in the amplified image.

For surgeons, especially those in industrial work, daily application of this technique will be found useful. The clear delineation of details is not possible by photographic enlargement, as the unsharpness due to the film emulsion itself will also be magnified and cloud the image.

In summary, it can be said that there are frequent situations in clinical practice where direct enlargement radiography may be of help. This is especially true in industrial practice where it may be necessary to determine minimal amounts of callus or to delineate obscure fractures as in the carpal bones. Finally, application may be found in certain medicolegal cases where one may wish to demonstrate certain features of an x-ray examination to the judge and jury.

From a paper read on the same subject at the October, 1957, meeting of Physicians and Surgeons of The Pennsylvania Railroad, Penn-Sheraton Hotel, Pittsburgh.

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Inefficient

More than one third of the industrial workforce is operating below optimum visual efficiency, estimates Lowell F. Johnson, of the American Home Products Corporation. Yet, says Mr. Johnson, the application of modern know-how can reduce by more than 75% the number of workers visually unqualified for their jobs. A study made at General Electric in Cleveland showed that vision testing paid off in higher productivity, improved safety, and less absenteeism. And the survey showed that GE workers who met visual standards earned between $60 and $124 more per month than those who did not.

—From *Supervisory Management*, July, 1958.

Most interested physicians are adamant in recommending that the term whiplash injury not be accepted as a diagnostic entity, that the cases accepted as severe extension flexion injuries of the neck be carefully and fully studied and that a committee be formed to assist the courts in interpreting this syndrome.

Whiplash

• N. GILLMOR LONG, M.D.
Medical Director
Lumbermen's Mutual Casualty Company

The unfortunate term "whiplash" is now a household word, used by the man in the street and in the jury box as connoting a "severe lashing blow caused by the head being on the receiving end of a whip." It carries with it the same idea of severe trauma as would the term "fractured disc." Yet Dr. Martin Abel stated that in routine roentgenological studies of the allegedly normal spine in cadavers and younger adults, a fairly high percentage showed evidence of old minor fractures and soft tissue changes with no specific history of major trauma. He concluded that if the minor bone changes, so elaborately blown up by plaintiffs' attorneys, were compared to the relatively minor clinical sequelae of fractured ribs, there would be a proportionate decrease in monetary awards with a direct savings of millions of dollars to industry and secondary benefit to all workers.

This does not mean that severe neck injuries cannot occur within the estimated 1.5% of neck and cervical spine involvement in all crash injuries. There is probably a low percentage of overlooked cervical bone fractures owing to lack of complete x-ray studies of the neck in flexion and extension. Most severe rear end auto collisions cause multiple body injuries and most of the severe neck injuries do not go through a one to two week latent asymptomatic period. Dr. Paul Braunstein reported that epidemiological findings, based on data from the Automotive Crash Injury Research Project at Cornell University Medical College, showed "of 5,510 injury producing automobile accidents involving 12,000 people, 144 cases of whiplash injury were collected." Of these, only 19% were regarded as severe. He recommended that all industrial surgeons procure a reprint of the paper, "The Fallacy of Whiplash Injuries." Whiplash will in time join the other popular diseases such as the old railroad back and the fractured disc. Here again, no one denies that 8% to 10% of all back injuries can be proved to be herniated discs and operative relief is the only therapy in a well documented case. But by the same token, 90% of all back sprains can be treated conservatively even though they are labeled ruptured discs until proved otherwise. It is frightening and scientifically stupid to label all minor "injured" neck sprains received in auto accidents as whiplash injuries, to be propped up by cervical collars with all the attendant mental scarring and expensive litigation.

Our experiences have paralleled those of most other industrial surgeons; less than 10% of the labeled whiplash injuries are more than minor or moderate cervical neck sprains, readily amenable to one to two weeks physiotherapy. I agree with Dr. T. Lamphier of Boston that it is most difficult to accept as genuine subjective cases, those presenting complaints one to two weeks after minor force deceleration. The severe cases of extension, flexion neck injuries surviving major crash injuries with compression cervical body fractures, apophyseal injuries, articular process involvement, and/or definite spasm demonstrated on flexion or extension of neck musculature, represent a true symptom complex. Usually severe "whiplash injuries" are associated with other body trauma of an equally severe nature. Dr. Charles J. Frankel, in "The Medical Legal Aspects of Whiplash Injury," stated that "whiplash injuries of the spine are rapidly taking their place amongst the leading causes for litigation. Attorneys have seized upon the terminology whiplash injury and have misused the term with gusto."

It is hoped that industrial physicians will agree that the term "whiplash injury" is not a diagnostic entity and that the term should not be used. If this is done, the plaintiffs' attorney will be forced to consider the facts before him Based on an extension flexion injury, the amount of calculated abrupt deceleration, the force of the blow, the amount of rear end (or in rare cases, front end) damage involved. Only then, when supported by true objective interpretations, will automobile crash injuries assume their rightful perspective.

Asian Type A INFLUENZA

RESULTS OF AN INDUSTRIAL IMMUNIZATION PROGRAM

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- M. J. McANDREW, M.D. and
- MARY KOBBINS, M.D.

Employee Health Department
Abbott Laboratories
North Chicago, Illinois

By the end of June, 1957, it became apparent that an epidemic of influenza caused by Asian type A virus would occur in the United States some time in the fall. Pharmaceutical manufacturers were encouraged by government health authorities to make plans to deal with abnormal demands for drugs, transportation difficulties and interruptions of production which might occur if the epidemic were severe. As a part of these plans, the Employee Health Department of Abbott Laboratories was asked by the management to consider the possibility of a mass immunization program. It was learned that supplies of vaccine would be available in September. This was a monovalent Asian strain, type A, containing 200 chicken cell agglutination units per cubic centimeter. The recommended dose was one cc subcutaneously.

Recommendation was made to the management that this vaccine be offered to all employees who desired it; this was approved, and orders were placed in the middle of August.

The first lot of vaccine was received from Merck Sharp & Dohme by the first week of September, and vaccinations were started immediately. These continued through October 30 at a rate limited only by the arrival of partial shipments. Figure 1 (broken line), shows the cumulative number of inoculations by 10-day periods from September 1 to November 19. It will be noted that the bulk of vaccinations was completed by the first week in October. Out of 3,370 employees, 3,047 requested and received vaccine; 323 refused, and it is believed that none of these received immunization elsewhere. Participation in the program was thus a little better than 90%.

Arrival of the Epidemic

Beginning September 1, all on-clock employees returning to work after a sick-absence, and who gave as a reason "cold," "cough," or any other respiratory complaint, were questioned about other symptoms which might indicate that the illness was influenza. These were chills, fever, lassitude and malaise, headache and sore throat. On this basis, the absence was classified either as influenza or ordinary cold. The number of such absences was scrutinized every 10 days, and it soon became apparent that a sharp rise was taking place, beginning about the middle of September. Absences continued to rise to a peak in the first 10 days of October, continued high for about one month, and then declined early in November. Figure 1 shows this incidence curve (solid line), superimposed on the cumulative number of immunizations. Comparison with absence records in 1956 and 1955 showed that during October hours lost from all respiratory disease had more than doubled in 1957.

The absence records for the on-clock employees did not give a complete picture of the epidemic, since 754 employees were off-clock, and were not required to report their absences to the Health Department. Accordingly, a questionnaire was sent to all off-clock employees early in 1958, asking if they had lost any time from work because of influenza during the period September 1 to December 31. The questionnaires were accompanied by a letter from the President of the Company, and required a signature. The replies were checked against a list of names. Approximately 99% coverage was obtained. The absences ascertained in this way are included in the curve in Figure 1 and in subsequent calculations.

Degree of Protection

The epidemic began while inoculations were still in progress; two weeks are required after an inoculation of influenza vaccine before immunity is present. As a result, some employees became ill with influenza before they had been inoculated, and others before the two weeks had elapsed. There were 87 such cases. Of the remaining 2,960 who received the inoculation, 232 became ill with influenza 14 days or more following it. The incidence in this group was thus 7.8%.

Of the 323 employees who did not receive any inoculation, 38 became ill with influenza, an incidence of 11.7%. If this is considered to be the attack rate which would have prevailed in the whole factory population had there been no immunization, it will be seen that the mass inoculations achieved a slight, but not striking, protective effect. On this basis, 37 cases were prevented which otherwise might have occurred — a little more than one case per 100 persons vaccinated.

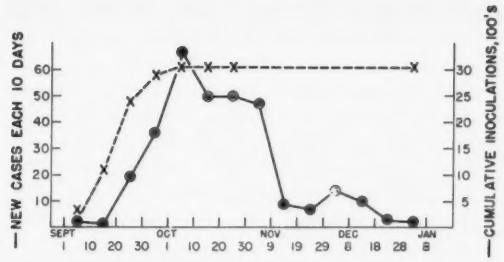

FIG. 1. NEW CASES AND CUMULATIVE INOCULATIONS, 10 DAY INTERVALS

Reactions to the Vaccine

No immediate reactions, such as syncope or anaphylaxis, occurred at the time of inoculation.

Early in 1958, a questionnaire was circulated to all employees asking them to report any reactions they might have had to the vaccine. There were spaces to check the following items:

No reaction.
Slight stinging immediately, went away in a few minutes or hours.
Soreness but not red or swollen next day.
Sore several days.
Soreness, redness and swelling.
Fever and illness.
Lost time from work.
Other reaction.

There were 1,896 questionnaires returned, or about 62% of those distributed. Forty-five and five-tenths percent reported no reaction, 12.2% reported only slight stinging and 12.9% only soreness the next day. One and four-tenths percent reported losing time from work. The number reporting other reactions, or multiple reactions, is shown in Table I.

Population Characteristics

The employee population at the time of the epidemic was predominantly composed of white Americans. Females comprised 45.7%, males 54.3%. The age distribution is shown above:

Under 20	6.9%
20-25	11.5
25-30	11.9
30-35	15.0
35-40	13.3
40-45	12.7
45-50	11.0
50-55	7.8
55-60	5.1
60-65	4.5
Over 65	0.3

Roughly one-quarter of the group was employed in administration and sales, one-quarter in research; the remaining half was engaged in production.

Of the employees who reported having influenza, 51.0% were female, 49.0% male.

Comment

The practical limitations encountered in a study of this kind are obvious, and do not permit certainty in interpreting the results. In practically every case the diagnosis of influenza was self-diagnosis by the patient. No virus studies were done, and no paired serum samples were tested for antibody. Certainly, other febrile respiratory diseases must have been present during the epidemic, as they are every year at this season, and the methods used did not distinguish these from influenza.

On the other hand, there can be no doubt that an epidemic of febrile respiratory disease did exist in the community during the period of the study, as was the case throughout the United States in late 1957. High schools in the area reported absence rates up to 50% one or two weeks before the peak of new cases was reached in the factory population. Sick absence from respiratory disease in the factory during this period exceeded that in previous years twofold. It is reasonable to believe that most of this excess illness was caused by the Asian A virus, as it was in other communities where virus studies confirmed the fact.

This study demonstrates that it is possible to

TABLE I.
REACTIONS TO INFLUENZA VACCINE

Total patients	No reaction	Stinging	Sore, not red or swollen	Sore several days	Sore, red, & swollen	Fever, malaise	Lost time	Miscellaneous
849	849	—	—	—	—	—	—	—
234	—	234	—	—	—	—	—	—
243	—	—	243	—	—	—	—	—
91	—	—	—	91	—	—	—	—
115	—	—	—	—	115	—	—	—
29	—	—	29	29	—	—	—	—
28	—	—	—	28	28	—	—	—
92	—	92	92	—	—	—	—	—
32	—	32	—	32	—	—	—	—
45	—	45	—	—	45	—	—	—
16	—	—	—	—	—	16	16	—
13	—	—	—	—	—	13	—	—
40	—	2	1	—	—	—	—	40
17	—	10	3	4	6	17	—	—
34	—	—	12	10	10	34	10	—
18	—	8	4	4	6	—	—	18
1896	849	423	384	198	210	80	26	58

carry out a mass immunization program on a voluntary basis in an industry and obtain 90% participation in a few weeks. The number of mild and severe reactions to the vaccine reported on the questionnaires came as a surprise to the medical staff; during the immunization period, our clinical impression was that very few reactions had occurred. Given the speed and efficiency with which "the grapevine" operates in most factories, as well as the tendency to exaggeration this network has, it is somewhat surprising that people seemed as eager to be inoculated at the end of the program as they were at its beginning. Possibly the reactions seemed more severe in retrospect than they did when they occurred.

Summary

Three thousand forty seven pharmaceutical workers received Asian strain, type A, influenza vaccine, 200 chicken cell agglutination units, subcutaneously, in September and October, 1957. Three hundred twenty three other workers in the factory did not receive vaccine.

Medical department records of sick absence showed an increase in febrile respiratory disease of epidemic proportions beginning in mid-September and reaching a peak in early October. A similar epidemic was reported in the community at large, and is believed to have been Asian type A influenza.

Since the epidemic came closely on the heels of the immunization program, 87 persons reported influenza either before receiving vaccine or less than two weeks after receiving it.

Of the remaining 2,960 persons receiving vaccine two weeks or more before the onset of the disease, 232 contracted it, or 7.8%. In the non-vaccinated group, the incidence was 11.7%.

Reactions to the vaccine, as reported by a questionnaire, are noted in tabular form.

The Handicapped Worker

Handicapped workers should, if possible, be exempted from company's seniority regulations in the event of layoff, advises John B. Clark, industrial relations director of Northrop Aircraft, Inc., in a new report by the President's Committee on Employment of the Physically Handicapped. Mr. Clark adds that job security is of particular importance to handicapped workers, since they know they will have a more difficult time finding other employment if laid off than would an unimpaired worker. Clark reports, "Waiving seniority provisions under such circumstances does not meet with opposition from the remainder of the personnel." Other key pointers in the President's Report are: Whenever possible, it is wise to work through a third party, such as the state office of rehabilitation, in screening handicapped persons for employment; the employment interviewer should give the accepted applicant as complete a picture as possible of the prospective work situation; if possible the new employee should be introduced to a person in the company with a similar impairment who can give him useful advice; the supervisor of the newly-hired handicapped employee should be completely informed as to the type of person he will have in his department and given the opportunity to prepare other members of the work group for the occasion, stressing the importance of treating impaired person in the same causal matter-of-fact way that any other employee would be treated; unless impaired individual's personnel records are properly identified it is possible in the hustle and bustle of large scale personnel transfers or layoffs the impaired person may be inadvertently discriminated against. Such a situation causes embarrassment to all concerned and may result in unfavorable publicity for the company.

Inoculation Against ASIAN INFLUENZA

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Studies of the recent epidemic of Type A (Asian variant) influenza throughout the world are contributing significantly to the eventual eradication of this latest of the great infectious plagues. At present, vaccine inoculation occupies a prominent place in the efforts to eliminate the epidemic spread of influenza. This study presents over-all results of inoculation in a group of 1,330 subjects, in contrast to those observed in 416 unvaccinated control subjects.

Previous Observations on Asian Influenza

The history of influenza through past centuries has been recounted in recent publications.[1] The R. E. Dyer Lecture by Shope is an interesting informative review of the subject.[1b]

Certain evidence suggests that man has had previous acquaintance in modern times with the virus of Asian influenza.[6,12,13,21] Ability to undergo mutations with apparent ease and frequency has helped the influenza virus to circumvent mass human resistance. The swine set of influenza virus responsible for the 1918 pandemic was replaced in dominance by a mutant strain, Type A, during the years 1933-1943. Another mutation permitted the A prime strain to completely replace earlier variants, in 1947. During the past year (1957) another mutation, apparently originating in the Far East, unleashed the new Asian variant of Type A virus against the relatively low resistance of the world's population. Studies from Holland on antigenic properties of sera from subjects 70 to 80 years of age strongly indicated previous exposure to Asian variant virus.[21] This finding was in marked contrast to studies on sera of younger subjects. These data suggested the theory, now generally accepted, that the severe pandemic of 1889-1890 was caused by a virus mutant, identical or nearly identical to the present Asian variant.

Following identification of the new Asian mutant strain in May, 1957, studies in certain vital areas of inquiry were pressed forward to expedite the necessary program of public education and mass inoculation. Available vaccines against Types A, A prime and B failed adequately to stimulate antibodies against the Asian strain;[16] hence mass production of new vaccine containing the Asian variant was necessary. Single subcutaneous injection of one cc of vaccine, containing 200 CCA (chicken cell agglutination) units of attenuated Asian virus, was found to produce four-fold or higher rises in complement fixation titers in sera of 80% to 90% of inoculated subjects.[8,9] However, vaccines containing 400 to 500 CCA units per cc were required to increase hemagglutination-inhibition antibodies in human sera to levels actually seen after active infections with the Asian virus.[20] A potency of 200 CCA units per cc was generally accepted when manufacturing difficulties hampered production of a vaccine of greater strength.[13,20]

Intradermal injection of smaller quantities of vaccine (hence of fewer CCA units per injection) was found distinctly less effective in raising antibody levels in adults. Children responded to the intradermal method more effectively than adults,[8] but also responded best of all to the subcutaneous route and dosage.

A study of reactions to vaccine (200 CCA units per cc subcutaneously) revealed fever in 14%, generalized pain in extremity in 54%, local pain at the site of injection in 42%, and local swelling in 18%.[18] Reactions usually cleared in 12 to 24 hours and resulted in no loss of time from work, it has been reported.

Initial limitation of quantities of available vaccine suggested restriction of its use to certain groups — travelers from distant areas and their immediate contacts,[2] airlines personnel, migrant workers, hospital and military personnel[3,4] and other comparable large groups.[5,10] Mass vaccination of the entire population was considered the most desirable over-all objective.

Studies of the effectiveness of the Asian virus vaccine in the prevention of illness have been reported.[9,17,20,21] In one study, vaccines of strength 200 CCA per cc and 506 CCA per cc were found in a group of 70 volunteers to have approximately equal effect in producing four-fold or greater increases of CF and HI antibodies. Three to four weeks after vaccination, the group was exposed directly to challenge with live Asian virus; the difference in strength of

From Socony Mobil Oil Company, Inc.: Dr. Sinclaire, Dr. Saunders, Mr. Ernest, and Miss Ericson. Dr. John Flynn, New York, N. Y.

vaccine had no effect on the degree of protection against symptoms of illness. A control group had been inoculated with placebo solution and similarly exposed to live Asian virus. The vaccinated group developed influenza symptoms in 44%; the control group in 78%. The control group tended to have more severe and more prolonged symptoms than the ill subjects in the vaccinated group. However, protection was obviously far from complete, under these circumstances of artificial exposure to live virus.

At Fort Ord, California, during the waning phase of an Asian influenza epidemic, 918 new recruits were inoculated with monovalent Asian virus vaccine containing 200 units per cc and administered subcutaneously. 1,448 new recruits formed a control group injected with a placebo of unadulterated saline. During a three-week period of observation, respiratory disease not specifically identified developed in the vaccinated group at a rate of 35.8 per 1,000, and in the control group at a rate of 97.6 per 1,000. Estimated effectiveness of the vaccine in this study was 63%.

At Camp Kilmer, New Brunswick, in July, 1957, Asian virus vaccine of strength 200 CCA units per cc was administered subcutaneously to 1,000 recruits. Another 1,000 comparable recruits were given placebo injections as controls. An epidemic of acute respiratory illness occurred at the military camp. From September 9 to October 27, 1957, there were 4,300 hospital admissions during this epidemic. Examination of the hospital admission rates for the vaccinated group and the control group showed a rate of 4.3 per 1,000 in the vaccinated group and a rate of 9.7 per 1,000 in the control group. The estimated effectiveness of the vaccine was 56%.

At Fort Dix, New Jersey, in July, 1957, Asian virus vaccine of strength 200 CCA units per cc was administered subcutaneously to 1,000 recruits. Another 1,000 comparable recruits were given placebo injections as controls. An epidemic of acute respiratory illness occurred at the military camp. From September 9 to October 27, 1957, there were 4,300 hospital admissions during this epidemic. Examination of the hospital admission rates for the vaccinated group and the control group showed a rate of 4.3 per 1,000 in the vaccinated group and a rate of 9.7 per 1,000 in the control group. The estimated effectiveness of the vaccine was 56%.

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demic occurred at Fort Dix near the end of September, 1957. Tabulation of hospital admission rates for respiratory disease for the period September 29 to October 20 revealed a case rate in the control group of 76.1 per 1,000; in those receiving 200 CCA units, 33.2 per 1,000; in those receiving 750 CCA units, 17.4 per 1,000. The estimated effectiveness of the 200 unit vaccine was 57% and of the 750 units vaccine, 77%.

At the Great Lakes Naval Training Center, Illinois, on August 10, 1957, 1,080 recruits were given subcutaneously a monovalent Asian virus vaccine containing 200 CCA units per cc; 1,081 recruits were given one cc subcutaneously of Armed Forces 1956-57 polyvalent vaccine (swine PR8, Great Lakes strains); 1,444 recruits given placebo injections served as controls. Epidemic Asian influenza occurred at the Center between October 5 and October 25. Tabulation of hospital admission rates for respiratory illness during that period indicated a case rate in the placebo-control group of 162.1 per 1,000; in the polyvalent non-Asian virus vaccinated group, 92.1 per 1,000; and in the Asian virus vaccinated group, 38.8 per 1,000. In this short interval, the effectiveness of the Asian virus vaccine was 76%; that of the 1956-57 polyvalent vaccine, 43%.

Materials and Methods

A large international company, Socony Mobil Oil Co., Inc., in order to prevent a serious problem due to a large number of absentees, offered influenza vaccine to their employees. The program at the headquarters office was purely voluntary and employees who wished themselves to be able to spring request were sent given [illegible] monovalent vaccine subcutaneously. The program began at the end of August and continued through the end of October, at the vaccine supply was available. The program was limited to employees at [illegible] 25 were vaccinated at the time.

[illegible] [illegible] had to be [illegible] [illegible] [illegible]

sponses were received, representing a 69.9% return. Since the vaccine could not be expected to prevent a "flu-like" illness within the 10 days following vaccination, reported illness or lost-time during this period was not allowed to influence the final analysis of vaccine effectiveness. In Table I, the lost-time cases in this group are totaled with the unvaccinated group.

The responses were studied with respect to differences in experience among vaccinated and unvaccinated, male and female employees, number of days lost from work due to "cold or flu-like illness", and vaccine reaction, number of lost-time cases and no lost-time cases, and the time intervening between vaccinations and illness. Table I is a summary of the data collected.

These factors were then cross analyzed to discover any significant relationships. Table II is a summary of lost-time and no lost-time cases classified as to male or female, vaccinated or unvaccinated, with percentage distributions of the various segments shown.

Table III summarizes the average days lost for illness comparing vaccinated employees with the control group of unvaccinated employees. It also summarizes the time lost due to reactions to the vaccination.

Results:

Analysis of the percentage relationships in Table II yielded the following facts:

1. The Asiatic Influenza Vaccine Program significantly reduced the number of lost-time cases due to "cold or flu-like illnesses."

Employees	Number of Lost-time Cases	Percent Lost-time	Number Surveyed
Vaccinated	416	31.3%	1,330
Unvaccinated	158	38.0	416
Total	574	32.9%	1,746

The actual difference between proportions 6.7% (38.0 to 31.3) is 2.58 times the standard error of the difference, with 1,745 degrees of freedom (N-1). This difference is significant at a 1% level of confidence. A difference this large might be expected to occur due to chance only once in 100 similar surveys. Figure 1 shows this difference graphically.

It is interesting to note that male employees constituted 66% of the vaccinated and 67% of the unvaccinated respondents. This was unintentional, but welcomed from a comparability standpoint.

2. The difference between the experience of male and female employees proved highly significant, with the distaff members reporting 41.8% of their total number had lost-time from work compared to 28.3% for the male employees, nearly twice the proportional lost-time of the male experience.

TABLE I.

Time Intervening Between Vaccination and Illness	TOTAL TIME LOST FROM WORK DUE TO ILLNESS							MALE TIME LOST FROM WORK DUE TO ILLNESS							FEMALE TIME LOST FROM WORK DUE TO ILLNESS						
	None	1 Day	2 Days	3 Days	4 Days	5 or More Days	Total Cases	Total Days	None	1 Day	2 Days	3 Days	4 Days	5 or More Days	Total Cases	Total Days	None	1 Day	2 Days	3 Days	4 Days	5 or More Days	Total Cases	Total Days
									VACCINATED															
Total Vaccinated	914	103	130	66	42	75	1,330	1,324	648	61	70	32	28	40	879	716	266	42	60	34	14	35	451	608
11 days 1 less than 1 month	—	6	15	7	8	12	48	194	—	2	10	2	4	2	20	77	—	4	5	5	4	10	28	117
1 month - less than 2 months	—	16	35	15	10	28	104	424	—	10	18	8	5	15	56	202	—	6	17	7	5	13	48	222
2 months - less than 3 months	—	26	25	14	11	17	93	271	—	13	13	7	7	12	52	164	—	13	12	7	4	5	41	107
3 months - less than 4 months	—	32	31	14	7	9	93	233	—	21	15	8	7	7	58	162	—	11	16	6	—	2	35	71
4 months and over	—	20	16	12	5	7	60	157	—	13	10	5	4	3	35	86	—	7	6	7	1	4	25	71
Indeterminate	—	3	8	4	1	2	18	45	—	2	4	2	1	1	10	25	—	1	4	2	—	1	8	20
									UNVACCINATED															
Total Unvaccinated	258	37	48	32	21	20	416	465	179	24	28	18	13	12	274	281	79	13	20	14	8	8	142	184
									LOST-TIME DUE TO VACCINE REACTION															
Total	—	9	3	1	2	—	15	26	—	5	—	1	—	—	6	8	—	4	3	—	2	—	9	18

vaccine had no effect on the degree of protection against symptoms of illness. A control group had been inoculated with placebo solution and similarly exposed to live Asian virus. The vaccinated group developed influenza symptoms in 44%; the control group in 78%. The control group tended to have more severe and more prolonged symptoms than the ill subjects in the vaccinated group. However, protection was obviously far from complete, under these circumstances of artificial exposure to live virus.

At Fort Ord, California, during the waning phase of an Asian influenza epidemic, 916 new recruits were inoculated with monovalent Asian virus vaccine containing 250 units per cc and administered subcutaneously. 1,448 new recruits formed a control group injected with a placebo of formalinized saline. During a three-week period of observation, respiratory disease (not specifically identified) developed in the vaccinated group at a rate of 21.8 per 1,000; and in the control group at a rate of 37.9 per 1,000. Estimated effectiveness of the vaccine in this study was 43%.

At Lowry Air Force Base, Colorado, in July, 1957, Asian virus vaccine of strength 200 CCA units per cc was administered subcutaneously to 775 airmen. Placebo injections of formalinized saline were given to 806 controls. An epidemic of acute respiratory illness occurred on the military station from September 16 to October 27, 1957. Analysis of hospital admissions during this epidemic determined a case rate of 59.3 per 1,000 for the vaccinated group; and a case rate of 150.1 per 1,000 in the control group. The estimated effectiveness of this vaccine was 61%.

On the same post, and at the same time, a monovalent Asian virus vaccine of strength 400 CCA units per cc administered subcutaneously was given to 649 airmen; the same placebo above was given to 624 other military personnel as controls. Study of hospital admissions in this group revealed in the vaccinated subjects a case rate of 17.3 per 1,000; and in the controls, a rate of 52.5 per 1,000. Effectiveness of this vaccine was rated as 67%.

An additional study at Lowry Air Force Base at the same time revealed that a polyvalent vaccine containing Asian virus 400 CCA units per cc was only as effective as monovalent vaccine containing only Asian virus 400 CCA units per cc.

At Fort Dix, N. J., between August 1 and September 6, 1957, 1,869 recruits were vaccinated subcutaneously with a monovalent Asian virus vaccine containing 200 CCA units per cc. One thousand six hundred sixty five recruits were given a vaccine containing 750 CCA units per cc. One thousand six hundred sixty five recruits were given formalinized saline as controls. An epidemic occurred at Fort Dix near the end of September, 1957. Tabulation of hospital admission rates for respiratory disease for the period September 29 to October 20 revealed a case rate in the control group of 76.1 per 1,000; in those receiving 200 CCA units, 33.2 per 1,000; in those receiving 750 CCA units, 17.4 per 1,000. The estimated effectiveness of the 200 unit vaccine was 57% and of the 750 units vaccine, 77%.

At the Great Lakes Naval Training Center, Illinois, on August 10, 1957, 1,080 recruits were given subcutaneously a monovalent Asian virus vaccine containing 200 CCA units per cc; 1,031 recruits were given one cc subcutaneously of Armed Forces 1956-57 polyvalent vaccine (swine, FM1, Great Lakes strains); 1,444 recruits given placebo injections served as controls. Epidemic Asian influenza occurred at the Center between October 5 and October 19. Tabulation of hospital admission rates for respiratory illness during that period indicated a case rate in the placebo-control group of 162.0 per 1,000; in the polyvalent (non-Asian virus) vaccinated group, 92.1 per 1,000; and in the Asian virus vaccinated group, 39.8 per 1,000. In this short interval, the effectiveness of the Asian virus vaccine was 75%; that of the 1956-57 polyvalent vaccine, 43%.

Materials and Methods:

A large, international company (Socony Mobil Oil Co., Inc.), in order to prevent a serious problem due to a large number of absentees, offered influenza vaccine to their employees. The program at the headquarters office was purely voluntary and employees who availed themselves of the offer by signing requests were each given one cc of 200 CCA units monovalent vaccine subcutaneously. The program began at the end of August and continued through the end of October, as the vaccine supply was available. One thousand three hundred two employees out of a total of 2,495 were vaccinated at the clinic.

Earlier reports[9,17,20,21] indicated that the vaccine did prevent some lost time from work and in order to substantiate this, it was decided to send out a questionnaire to the employee population.

It was felt that adequate controls of diagnoses and reporting of Asiatic influenza cases could not be attained. The questionnaire devised asked for information concerning "cold or flu-like illnesses." Questions were designed to facilitate comparisons between vaccinated persons and non-vaccinated persons, lost-time and no lost-time from work, and the number of lost-time cases and days lost by time intervening between the vaccination and illness.

Questionnaires were sent to 2,495 employees of the headquarters office. A total of 1,746 re-

sponses were received, representing a 69.9% return. Since the vaccine could not be expected to prevent a "flu-like" illness within the 10 days following vaccination, reported illness or lost-time during this period was not allowed to influence the final analysis of vaccine effectiveness. In Table I, the lost-time cases in this group are totaled with the unvaccinated group.

The responses were studied with respect to differences in experience among vaccinated and unvaccinated, male and female employees, number of days lost from work due to "cold or flu-like illness", and vaccine reaction, number of lost-time cases and no lost-time cases, and the time intervening between vaccinations and illness. Table I is a summary of the data collected.

These factors were then cross analyzed to discover any significant relationships. Table II is a summary of lost-time and no lost-time cases classified as to male or female, vaccinated or unvaccinated, with percentage distributions of the various segments shown.

Table III summarizes the average days lost for illness comparing vaccinated employees with the control group of unvaccinated employees. It also summarizes the time lost due to reactions to the vaccination.

Results:

Analysis of the percentage relationships in Table II yielded the following facts:

1. The Asiatic Influenza Vaccine Program significantly reduced the number of lost-time cases due to "cold or flu-like illnesses."

Employees	Number of Lost-time Cases	Percent Lost-time	Number Surveyed
Vaccinated	416	31.3%	1,330
Unvaccinated	158	38.0	416
Total	574	32.9%	1,746

The actual difference between proportions 6.7% (38.0 to 31.3) is 2.58 times the standard error of the difference, with 1,745 degrees of freedom (N-1). This difference is significant at a 1% level of confidence. A difference this large might be expected to occur due to chance only once in 100 similar surveys. Figure 1 shows this difference graphically.

It is interesting to note that male employees constituted 66% of the vaccinated and 67% of the unvaccinated respondents. This was unintentional, but welcomed from a comparability standpoint.

2. The difference between the experience of male and female employees proved highly significant, with the distaff members reporting 41.8% of their total number had lost-time from work compared to 28.3% for the male employees, nearly twice the proportional lost-time of the male experience.

TABLE I.

Time Intervening Between Vaccination and Illness	TOTAL TIME LOST FROM WORK DUE TO ILLNESS							MALE TIME LOST FROM WORK DUE TO ILLNESS							FEMALE TIME LOST FROM WORK DUE TO ILLNESS						
	None	1 Day	2 Days	3 Days	4 Days	5 or More Days	Total Cases	Total Days	None	1 Day	2 Days	3 Days	4 Days	5 or More Days	Total Cases	Total Days	None	1 Day	2 Days	3 Days	4 Days	5 or More Days	Total Cases	Total Days
									VACCINATED															
Total Vaccinated	914	103	130	66	42	75	1,330	1,824	648	61	70	32	28	40	879	716	266	42	60	34	14	35	451	608
11 days 1 less than 1 month	—	6	15	7	8	12	48	194	—	2	10	2	4	2	20	77	—	4	5	5	4	10	28	117
1 month - less than 2 months	—	16	35	15	10	28	104	424	—	10	18	8	5	15	56	202	—	6	17	7	5	13	48	222
2 months - less than 3 months	—	26	25	14	11	17	93	271	—	13	13	7	7	12	52	164	—	13	12	7	4	5	41	107
3 months - less than 4 months	—	32	31	14	7	9	93	233	—	21	15	8	7	7	58	162	—	11	16	6	—	2	35	71
4 months and over	—	20	16	12	5	7	60	157	—	13	10	5	4	3	35	86	—	7	6	7	1	4	25	71
Indeterminate	—	3	8	4	1	2	18	45	—	2	4	2	1	1	10	25	—	1	4	2	—	1	8	20
									UNVACCINATED															
Total Unvaccinated	258	37	48	32	21	20	416	465	179	24	28	18	13	12	274	281	79	13	20	14	8	8	142	184
									LOST-TIME DUE TO VACCINE REACTION															
Total	—	9	3	1	2	—	15	26	—	5	—	1	—	—	6	8	—	4	3	—	2	—	9	18

Employees	Number of Lost-time Cases	Percent Lost-time	Number Surveyed
Male	326	28.3%	1,153
Female	248	41.8	593
Total	574	32.9%	1,746

The actual difference between proportions 13.5% (41.8 to 28.3) is 4.82 times the standard error of the difference. It can safely be said that a difference this large could not be due to chance factors alone. Figure 2 portrays the extent of this difference.

3. No significant differences could be found when analyzing the data on the number of days lost due to "cold or flu-like illness" as shown in Table III. The average number of days lost from work per lost-time case was 3.12.

4. The greatest number of lost-time cases among vaccinated employees occurred between one to two months after vaccination. Figure 3 is a frequency histogram of lost-time cases among vaccinated employees by time intervening between vaccination and illness.

TABLE II.
NUMBER OF CASES

	Total Responses			Vaccinated			Unvaccinated		
	Lost Time	No Lost Time	Total	Lost Time	No Lost Time	Total	Lost Time	No Lost Time	Total
Total	574	1,172	1,746	416	914	1,330	158	258	416
Male	326	827	1,153	231	648	879	95	179	274
Female	248	345	593	185	266	451	63	79	142
	Percentage Distribution								
Total	32.9	67.1	100%	31.3	68.7	100%	38.0	62.0	100%
Male	28.3	71.7	100	26.3	73.7	100	34.7	65.3	100
Female	41.8	58.2	100	41.0	59.0	100	44.4	55.6	100

TABLE III.

Number of Days Lost Per Questionnaire Response	
Total all responses	1.02 days
Male	.86 days
Female	1.34 days
Total Vaccinated	1.00 days
Male	.81 days
Female	1.35 days
Total Unvaccinated	1.12 days
Male	1.03 days
Female	1.30 days
Number of Days Lost Per Lost-Time Case	
Total all lost-time cases	3.12 days
Male	3.06 days
Female	3.19 days
Total vaccinated lost-time cases	3.18 days
Male	3.10 days
Female	3.29 days

Time intervening from vaccination to illness	All Persons	Male	Female
11 days - less month	4.04	3.85	4.18
1 mo. - less 2 mo.	4.08	3.61	4.62
2 mo. - less 3 mo.	2.91	3.15	2.61
3 mo. - less 4 mo.	2.51	2.79	2.03
4 mo. and over	2.63	2.46	2.84
Indeterminate	2.50	2.50	2.50

Total unvaccinated lost-time cases	2.94 days
Male	2.96 days
Female	2.92 days
Lost-time Due to Vaccine Reaction	
Total all lost-time cases	1.73 days
Male	1.33 days
Female	2.00 days

COMPARISON OF REPORTED PERCENTAGE DISTRIBUTIONS OF LOST-TIME CASES AND NUMBER OF PERSONS BETWEEN VACCINATED AND UNVACCINATED EMPLOYEES

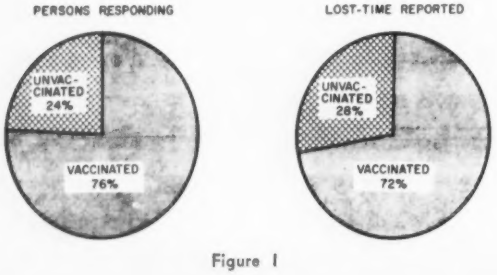

Figure 1

Comment

This study represents an attempt at an evaluation of an Asian influenza vaccination program in a large international company. The study does not differentiate between illnesses diagnosed as Asian influenza and other respiratory illnesses. The study was in an age group ranging from 17 to 65 years of age. This age group is known to be less prone to complications of influenza, and thus the amount of lost-time reported is not extended by complicating illness.

It is interesting to note that the statistics again show that women had a higher incidence of lost-time as compared to men. This fact has been reported previously by Plummer and Hinkle.[22] This, then, does not indicate that the vaccine is more effective in the male than in the female, but shows that women are more "sickness prone" and less motivated to work when ill.

This study extended from September 1, 1957 to January 15, 1958. This is a longer period of observation than reported in other studies on the effectiveness of Asian virus vaccine.[9,17,20,21] The attack rate found in our group was 263 per 1,000 for vaccinated males and 410 per 1,000 for vaccinated females compared to 347 per 1,000 and 444 per 1,000 respectively, for the unvaccinated controls, or in toto, 313 per 1,000 for the vaccinated group as compared to 380 per 1,000 for the unvaccinated group.

By applying the significant lost-time percentages for vaccinated and unvaccinated employees to the estimated 1,901 persons vaccinated (76.2% of 2495), 127 additional lost-time cases would have occurred if these persons had not been vaccinated.

The average number of work days lost per lost-

WOMEN EMPLOYEES EXPERIENCED A SIGNIFICANTLY HIGHER PERCENTAGE OF LOST-TIME CASES THAN MALE EMPLOYEES

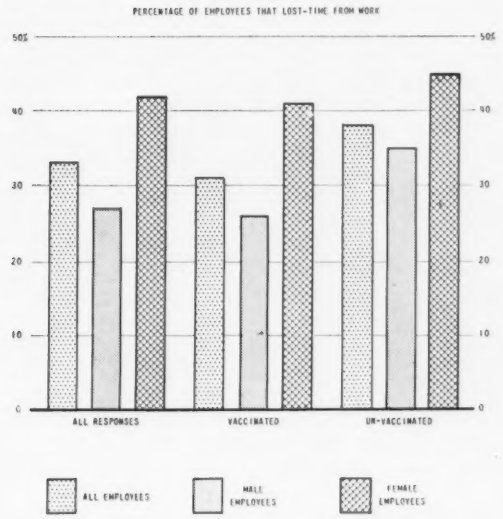

Figure 2

FREQUENCY HISTOGRAM OF LOST-TIME CASES BY TIME INTERVENING BETWEEN VACCINATION AND ILLNESS

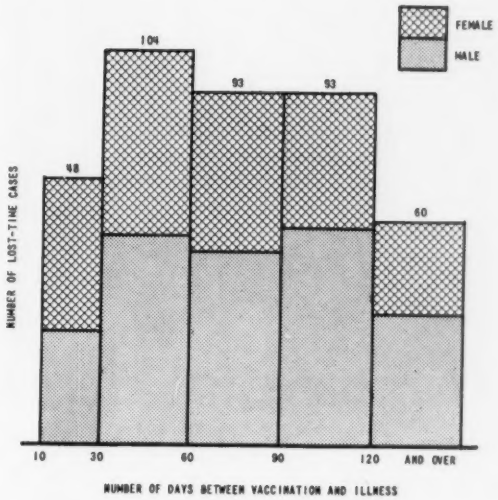

Figure 3

time case was calculated as 3.12. This multiplied by 127 is equal to 396, the estimated days saved by the Asian influenza vaccination program.

If the entire employee group of 2,495 had been vaccinated, it would be expected that 520 days would have been saved from time lost from work due to a "cold or flu-like illness."

Summary

Within the limitations imposed by this type of study, there appears to be some evidence that the use of Asian influenza vaccine reduces lost time from work due to "colds and flu-like illnesses" in large employee groups. The estimated effectiveness of the 200 CCA units monovalent influenza vaccine was 18%.

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Marion Jocz, M.D.
Medical Director

M. F. Bruton, M.D.
Assistant Medical Director

Evolution

in Chrysler Corporation's MEDICAL DEPARTMENT

Compared to the manufacture of textiles, steel or glass, the automobile industry is a newcomer. Essentially all its history lies in the present century and much in the past 25 years. It is not remarkable that in this industry substantial medical departments should have emerged only recently. Prior to 1936 Chrysler Corporation operated medical activities on an individual plant basis, all autonomic and with no effort toward uniformity in programs or practices.

In 1936 John J. Prendergast, M.D., was designated Medical Director for that rapidly expanding industrial empire. In the ensuing years Dr. Prendergast carved out a well conceived medical department. In 1954, Dr. Marion Jocz succeeded Dr. Prendergast as Medical Director. Long prior (1941) Dr. Jocz had become identified with Chrysler Corporation, first as director of the central diagnostic clinic and later as Assistant Medical Director. On ascendancy to the directorship, one of Dr. Jocz's major tasks was to build into the medical department a degree of resiliency appropriate to expanding medical requirements. After four years this became an accomplishment.

The days of October 17 and 18, 1958 formally mark that transfiguration. On those days and for the first time, the entire medical staff of Chrysler Corporation in the United States and Canada assembled in Detroit to symbolize and celebrate new achievements in the medical department's status, policies, attitudes and perspectives. At that time Chrysler Corporation, with its 95,000 employees and 47 plants, was served by 33 staff physicians, 120 staff nurses and seven industrial hygienists. In addition, Chrysler is served by numerous medical consultants and by local hospital staffs throughout the country.

These two days of transfiguration were marked by formal and informal programs, but the heart of the assembly was located in the printed form-

ulation depicting the new Chrysler medical department as directed by Dr. Jocz, a department that now has earned an essentially autonomous status within the corporation.

Partly in recognition of the Chrysler contribution to all of occupational health, its formal program is presented in detail. An equal reason for this presentation is that every large industrial corporation with multiple operations, wherever located, may find in this program elements of newness and of value.

Medical Policy

It is the proposed policy of Chrysler Corporation:

A. To preserve the occupational health of its workers by developing and carrying out programs in areas of Preventive Medicine, Occupational Medicine, and Rehabilitation Medicine.

B. To provide and maintain necessary in-plant medical staff, facilities and equipment to handle environmental situations and treatment of industrial injuries and diseases.

C. To provide emergency medical treatment only for nonoccupational injuries and diseases incurred by employees and others.

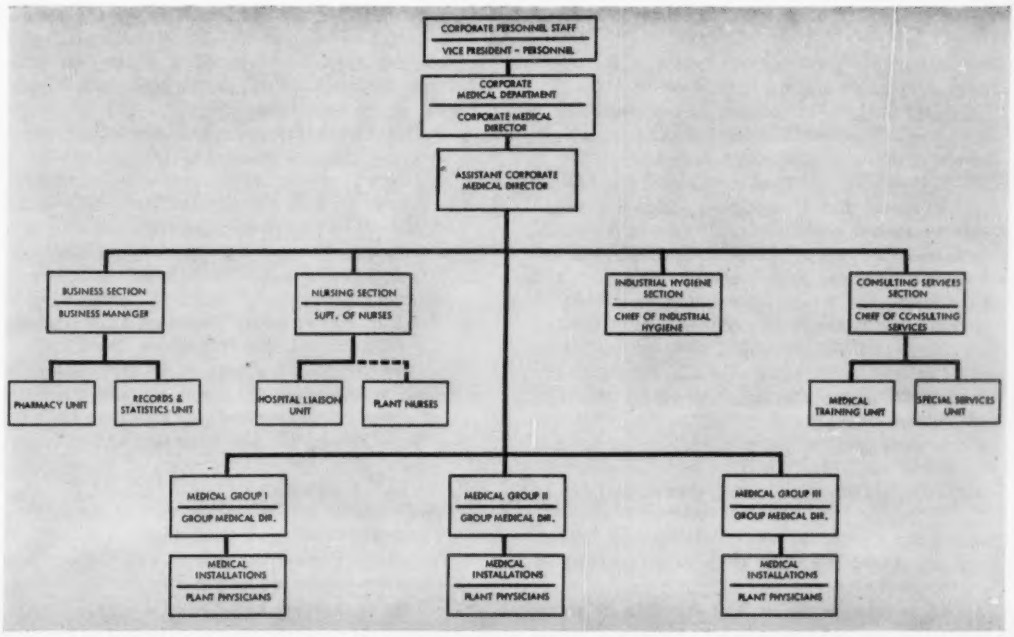
D. To maintain or have maintained in-plant and out-plant staff and facilities and plant programs initiated by management for rehabilitation of occupational injury cases.

E. Responsibility is on the Medical Department to perform all duties necessary to conserving work force through proper medical coverage at plant locations and out-plant medical activities.

Medical Department Functions

1. Develop and recommend Corporate medical objectives, policies, and procedures.
2. Counsel and advise management on the medical aspects and implications of various projects, programs, and activities of the Corporation.
3. Survey, upon management request, Corporation products or operations as such may affect public health.
4. Survey continuously community health trends in relation to Industrial Health; advise management and take action when indicated.
5. Maintain relationships with employees, medical profession, educational institutions and governmental health agencies in accordance with accepted medical ethics.
6. Establish standards of medical performance for group and plant medical departments and evaluate performance.
7. Establish and execute a medical training program for all medical personnel and evaluate continuously results of program.
8. Develop and administer financial controls over medical salaries, equipment, supplies, pharmaceutical and medical services.
9. Plan and administer medical aspects of the Corporate Executive Health Program.
10. Counsel and advise group and plant medical departments on performance of activities in compliance with over-all Corporate medical objectives, policies, and procedures.
11. Administer comprehensive medical program for Chrysler Corporation, such as:
    a. Provide medical examination of job applicants and advise management regarding proper job placement from medical standpoint.
    b. Develop and maintain a broad program for health preservation of Chrysler employees, including periodic health appraisals of selected occupational groups, post-illness examinations, surveillance of work environment,

Organization Chart



materials and industrial processes.

c. Provide emergency medical attention for non-occupational injury or illness cases.

d. Furnish medical care (in-plant and out-plant) required under the terms of the various workmen's compensation laws.

12. Administer recruitment and development of medical personnel; plan, equip, and maintain adequate medical facilities.
13. Arrange, control, and follow-up out-plant hospital and physician care for employee occupational injury cases.

Corporate Medical Director Functions

1. Develop, recommend, and implement Corporate objectives, policies, and procedures concerning Chrysler Medical activities.
2. Administer activities of Medical Department and out-plant medical services.
3. Counsel, advise, and direct staff and line Medical Department activities; appraise Medical Department performance and conformance to established objectives, policies, and procedures.
4. Conduct necessary planning and research in area of Industrial Medicine.
5. Cause the recruitment, evaluation, and selection of Medical Personnel.
6. Advise and counsel other Corporate functions or components on health and safety of employees.
7. Maintain relationship with and participate in the activities of medical, public health, educational institutions and related organizations.
8. Select, control, and evaluate outside medical care of occupational injuries.
9. Develop and install comprehensive medical program for occupational health and injuries; continuously evaluate program for conformance and improvements.
10. Cause the development and execution of training for all Medical Personnel.

Assistant Corporate Medical Director Functions

1. Assist the Corporate Medical Director in the development and implementation of Medical Department objectives, policies, and procedures.
2. Assist the Corporate Medical Director in over-all administration of Medical Department.
3. Assist the Corporate Medical Director in counseling, advising, and directing staff and line medical department activities and in appraising performance and conformance to established objectives, policies, and procedures.
4. Coordinate the establishment and execution of programs of the various components of Corporation Medical Department; assist Corporate Medical Director in carrying out his responsibility for satisfactory performance of daily activities of Medical Department.
5. Study continuously Corporate medical problems.
6. Interview, evaluate, and select physician applicants and make appropriate recommendations to the Corporate Medical Director.
7. Assist the Corporate Medical Director in advising and counseling other Corporate functions or components on health and safety of employees.
8. Assist the Corporate Medical Director in maintaining relationship with and participating in the activities of medical, public health, educational institutions and related organizations.
9. Assist the Corporate Medical Director in selecting, controlling, and evaluating outside medical care of occupational injuries.
10. Develop and install comprehensive medical program for occupational health and injuries and continuously evaluate program for conformance and improvements.
11. Develop, institute, and evaluate a medical training program for all medical personnel.
12. Perform related functions and carry out special assignments as requested by the Corporate Medical Director.
13. Assume the duties of the Corporate Medical Director in his absence.

Business Section Functions

1. Assist in development and implementation of Corporate medical objectives and procedures.
2. Develop, recommend, and implement necessary business procedures.
3. Administer Central Medical Stores activity for supply of medical function.
4. Administer financial activities of medical function.
   a. Develop and implement necessary records and forms.
   b. Develop and implement various financial controls of medical function and out-plant medical services.
   c. Establish various financial systems for proper processing of medical-business activities.
5. Coordinate planning and equipping of new and present medical facilities and equipment; approve replacement of obsolete equipment of medical function.
6. Perform necessary planning and research with respect to business area of medical function.
7. Advise and assist Assistant Corporate Medical Director in evaluation of performance of plant medical department as to day-to-day activities and conformance to Corporate medical objectives, policies, and procedures.
8. Perform special assignments as delegated by Assistant Corporate Medical Director.

Nursing Section Functions

1. Assist in development and implementation of Corporate medical objectives and procedures.
2. Develop, recommend, and implement nursing procedures.
3. Conduct and execute necessary research and planning for nursing activities.
4. Determine nurse training and educational needs; develop and carry out necessary nurse training, education and development programs.
5. Counsel Group Medical Directors and plant physicians on proper performance of nurses.
6. Assist in direction of plant nurses in proper performance of various nursing techniques and nursing treatment of employees.
7. Maintain continuing liaison and follow-up of Chrysler employees hospitalized for occupational illness or injury.

8. Advise and assist Group Medical Directors and/or plant physicians in placement and rotation of nursing personnel.
9. Establish necessary methods of proper communication to plant nursing personnel.
10. Advise and assist Group Medical Directors and/or plant physicians in evaluation of conformance and performance of nursing personnel with respect to day-to-day activities, Corporate medical objectives, policies and procedures.

Industrial Hygiene Section Functions

1. Plan, direct, and administer the Corporate environmental health program.
2. Conduct periodic and special surveys in plants for the detection and elimination of environmental hazards.
3. Operate laboratory facilities for required tests in environmental control.
4. Advise Group Medical Directors and plant physicians of control measures to avoid and eliminate environmental health hazards.
5. Advise Group Medical Directors and plant physicians of problems involving air and water pollution, community noise, etc., and participate as Corporate representative in the public health aspect of their control.
6. Evaluate potential health hazards in customer use of Corporation products.
7. Cooperate with other staff and Corporate components in matters involving environmental health.
8. Provide medical control of new materials and processes to be used in Corporate manufacturing facilities.

Consulting Services Section Functions

1. Perform certain medical diagnostic services for plant medical departments and communicate results of diagnosis.
2. Coordinate referrals of employees to medical specialists within Consulting Services Section and to specialists located at outside hospitals and medical centers.
3. Coordinate activities of specialists and communicate case medical findings to respective group and/or plant physicians.
4. Act as liaison between Medical Department and other Corporate components in respect to various medical diagnostic cases.
5. In conjunction with Corporate Personnel Staff, develop and institute educational and training programs for Medical Personnel. Review programs periodically and make improvements.
6. Develop and institute standards of medical performance for group and plant medical departments and periodically appraise performance.
7. Perform special assignments as delegated by Assistant Corporate Medical Director.

Group Medical Director Functions

1. Assist in the formulation of Corporate medical objectives, policies, procedures and programs.
2. Counsel Assistant Corporate Medical Director on operations of group and plant medical activities.
3. Advise, counsel, and direct plant medical activities within group.
4. Participate in necessary planning and research in regard to Corporate medical activities.
5. Review referrals of injury and disease cases to Corporate Consulting Services Section and/or outside medical facilities.
6. Survey continuously medical activities and facilities of plant medical and out-plant medical institutions, and provide quarterly performance reports to Assistant Corporate Medical Director.
7. Assist in developing, instituting, and reviewing periodically necessary controls for proper treatment of injury and disease cases.
8. Establish necessary methods for proper communication to plant medical personnel.
9. Determine training needs of medical personnel within group and recommend programs; cause necessary indoctrination of new personnel.
10. Advise and assist Assistant Corporate Medical Director in evaluation of conformance and performance of plant medical departments with respect to day-to-day activities, Corporate medical objectives, policies and procedures.
11. Perform medical function in headquarters' plant as Senior Plant Physician.
12. Perform special assignments as delegated by Assistant Corporate Medical Director.

Plant Physicians Functions

1. Direct professional activities of local staff; implement Corporate medical objectives, policies and procedures with respect to local staff.
2. Provide medical and surgical care of employees incurring occupational injury or disease.
3. Provide emergency or temporary treatment of employees incurring non-occupational injuries.
4. Provide physical examination of employees for proper job placement.
5. Maintain contact with employees and control of employees' medical treatment at outside medical facilities by adequate follow-up methods.
6. Survey continuously working environment of employees to insure physician's awareness of possible causes of injury; work with Plant Safety and Corporate Industrial Hygiene Section.
7. Advise and counsel other plant departments concerned with the health of employees.
8. Counsel employees in matters of health maintenance and hygiene.
9. Survey health problems in plant, including statistical analyses and advice to management on occupational health of employees.
10. Assist in maintaining good employee relations and morale.
11. Participate in the activities of medical organizations to continue their own development.
12. Perform special assignments as delegated by group medical directors.

Calcium^{45} Deposition During Induced Atherosclerosis

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For several years this laboratory has been interested in the role played by calcium, magnesium, copper and phosphorus in atherosclerosis. The experiment described in this communication is concerned with absolute calcium and magnesium levels in rabbit aortas, and the incorporation of calcium in these aortas under cholesterol induced atherosclerosis. Experiments investigating turnover rates of aortic calcium under the influence of various agents and parallel work on phosphorus are under way.

Ten week old rabbits were divided into two groups, A and B. Both groups were given 19 Ca^{45} injections over a sixteen week period. This was administered subcutaneously as 1.5 ml of 0.0075 M $Ca^{45}Cl_2$ in physiological saline. Each injection represented a dose of 7.5 μc. Group A was fed a balanced rabbit chow throughout the experiment; group B's ration was supplemented with 10 ml corn oil plus 1 gm cholesterol daily for the first 14 weeks of the experiment. Both groups were sacrificed at the end of 16 weeks. The aortas were excised, opened longitudinally and photographed. They were then transferred to a Soxhlet and extracted with ether for a period of eight hours after which they were placed intimal side down on Kodak No Screen Medical X-ray film covered with one layer of Saran Wrap. The film exposed to the aortas was lodged in a

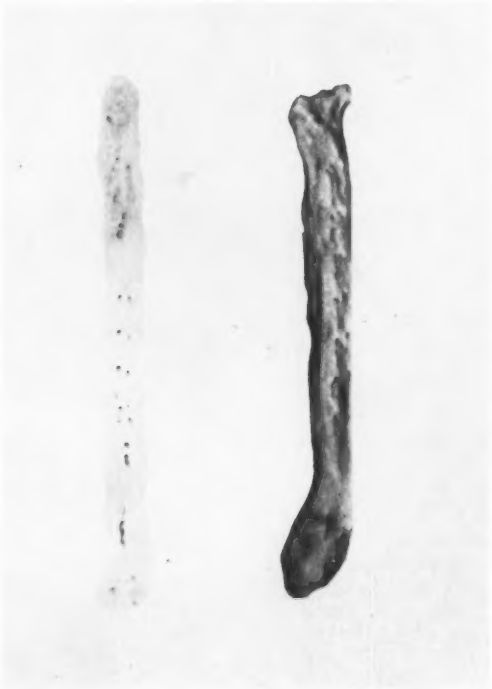

Figure 1
Photograph and Autoradiograph of rabbit (6) aorta from Group B. Mirror image.

Figure 2
Photograph and Autoradiograph of rabbit (11) aorta from Group B. Mirror image.

lead cassette for a period of 13 days. Previous work in this laboratory showed that the extraction procedure was necessary to obtain more distinct autoradiographs. Negligible radioactivity was found in the ether extract.

None of the aortas from the control animals (Group A) contained enough Ca^{45} to give an autoradiograph while all those of Group B were readily visible. Figures 1 and 2 show photographs and autoradiographs of two arteries taken from Group B. (Rabbits six and 11, respectively.) It will be noted that a comparison of the photograph and corresponding autoradiograph in each instance shows radio-calcium concentrated particularly in the atherosclerotic lesions. Fainter shadows are apparent and may be seen in areas not visibly involved in the disease. The implication is that calcium had been deposited throughout the process of plaque formation and is not superficially present in the tissue.

The results of the chemical analysis are reported in Table I. Total calcium and magnesium in the aorta were assayed spectrographically after wet ashing with perchloric-nitric acid mixture. Bone calcium from the shaft portion of a tibia was precipitated as oxalate from oxalic acid solution and titrated with permanganate after dry ashing. Ca^{45} activity was determined on oxalate precipitates, obtained in the case of the aortas with the aid of a 10 mg carrier. The measurements were made using a mica end-window Geiger Tube (Tracerlab TGC 2) and scaler.

It would appear that changes in calcium metabolism are an integral and perhaps important part of induced atherosclerosis. Further, calcium deposition is not late in coming, but is present throughout the process. Preliminary observation suggested that there is a direct relationship between calcium and phosphorus levels in the aorta. Magnesium levels tended to drop with increasing aortic calcium levels. However, this depression was of a much lower order of magnitude than the calcium changes and its implications are not quite clear at this time.

TABLE I.

	per gm. dry extracted aorta			per gram. bone ash	
Rabbit No.	Ca milligrams	Ca^{45} counts/min.	Mg milligrams	Ca grams	Ca^{45} counts/min.
Group A					
1	1.98	36.9	0.466	0.404	2.42×10^4
2	2.09	N.D.+	0.454	0.398	3.52×10^4
3	1.99	N.D.	0.406	0.403	3.00×10^4
4	1.64	N.D.	0.467	0.403	3.41×10^4
5	2.24	45.0	0.656	0.406	3.51×10^4
Median	1.99	N.D.	0.466	0.403	3.41×10^4
Group II					
6	5.33	342.0	0.397	0.405	3.56×10^4
7	3.78	94.4	0.584	0.391	4.00×10^4
8	7.00	114.0	0.437	0.401	4.08×10^4
9	26.70	825.0	0.395	0.412++	$5.18 \times 10^{4++}$
10	2.34	66.2	0.369	0.408	3.89×10^4
11	—	441.0	—	—	—
Median	5.33	228.0	0.397	0.403	3.95×10^4

+not detectable

++metatarsal bone rather than tibia used

This study was supported by the Michigan Heart Association and by Ciba Pharmaceutical Products, Inc.

This Most Excellent Canopy, the Air . . .

As with other resources once taken for granted, we are discovering that our usable air supply is not limitless and cannot be abused with impunity. Residents of many American communities have reason, from time to time, to echo Hamlet's words: "This most excellent canopy, the air . . . why it appears no other thing to men than a foul and pestilent congregation of vapours." Air pollution has been recognized as a problem since the early days of the Industrial Revolution. Until recently, the principal target for control has been visible pollution such as smoke and soot produced by burning solid fuels. Nowadays, smoke is only one of a number of contaminants. Others include automobile exhausts, products of domestic and municipal incineration, and a great variety of chemicals and gases, many of them undetected by the senses, given off by our highly diversified industries. Exploration of the short- and long-range effects of polluted air on our health is still in its early stages. We know, however, that man-made pollution combined with natural fog caused 20 deaths in Donora, Pa., in 1948, and several thousand deaths in London in 1952 and 1956. And we have no guaranty against similar disasters elsewhere. City dwellers pay for air pollution in increased laundry, cleaning, and painting bills. In some rural areas, farmers pay for it in damage to their crops and livestock. The annual air pollution cost for the Nation has been estimated at between $1.5 and $4 billion, exclusive of effects on health which cannot yet be accurately measured and the many "intangible" damages which result from living and working in an unpleasant environment.

—From announcement of National Conference on Air Pollution, U.S. Dept. of Health, Education and Welfare, U.S.P.H.S.

The high correlation between favorable personality characteristics and successful rehabilitation of patients with chronic low back complaints suggests psychogenic disorder in many persons with low back disabilities. The mechanism of psychogenic back pain is discussed and suggestions for treatment given.

CHRONIC LOW BACK PAIN

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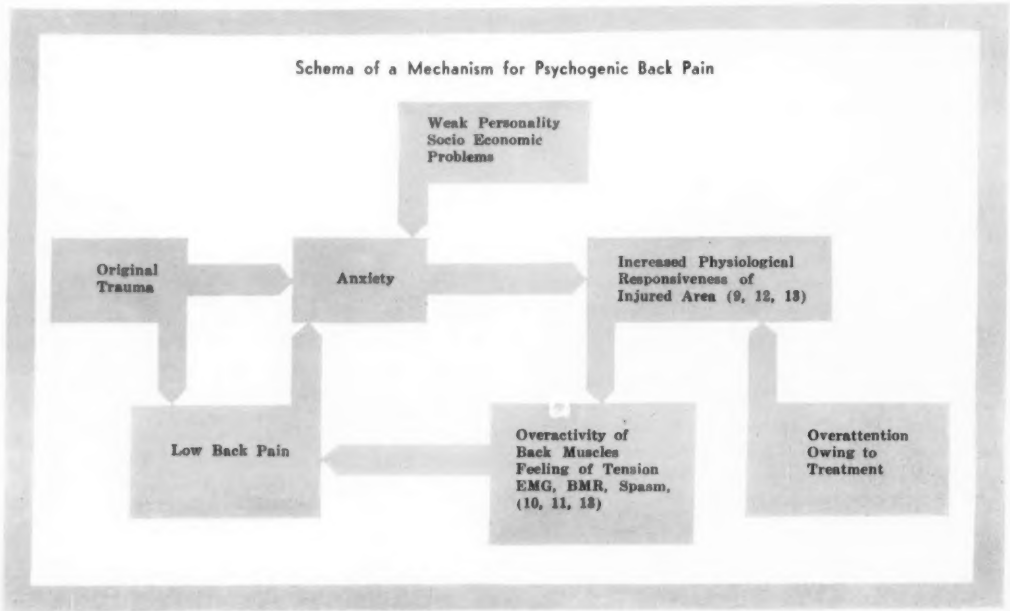
The chronically disabled victim of persistent low back pain following an industrial injury shares the vexations of his difficulty both with the physician and the insurance company. The patient languishes physically, economically and morally, while either pursuing treatment in the hope of eliminating his pain or anxiously awaiting settlement. The physician searches to discover some organic, treatable cause for the tenacious symptoms. The carrier has his legal and financial responsibilities, but often is immobilized from taking an active part in the management of the case.

The attitudes of the participants in this drama are determined by the rules and experience of each group just as social behavior is determined by the prevalent cultural values. The patient knows a pain must be treated by medical agents. The physician seeks an organic explanation for it, because discovery often brings comprehension and intelligent action. The carrier, guided by existing laws, is forced to equate incommensurable symptoms with hard cash. Yet pain is not always associated with tangible things. There is less difficulty in ascribing pain to psychogenic sources when it resides in a phantom limb. When, over a period of time, repeated examinations for headache bring nothing to light, it is not uncommon to attribute the pain, at least partially, to functional reasons — perhaps, because the



head is closer to the mind. But persistent back pain in the same circumstances as headache appears to require only a somatic answer — perhaps because the back is symbolic of physical qualities. As a result, for want of a better diagnosis, such convenient but unenlightening terms as "chronic sprain," "myofasciitis," "fibrositis"[1] are tolerated. These, if not identical to phantom pain, often evoke a phantom's pursuit.

At the risk of belaboring the figure of speech, it may be added that failure to catch and identify the phantom sometimes leads to the surgical practice of fusion, by which procedure the phantom's movements are restricted in a kind of bony prison, depending upon the architectural fashions of the day. Fifteen years ago, it was a bony bar thrown across the sacroiliac gap. Today, with sacroiliac instability out of fashion, fusion of part of the vertebral axis is resorted to. This is not to say that the rationale and efficacy of the operative procedure is obscure: it brings relief in truly unstable situations such as spondylolisthesis or degenerative changes threatening the integrity of roots. But the general proposition receives authentication by the fact that opinions regarding the indications for fusion in chronic low back pain are quite divergent.

These questions of cause and treatment defy pat answers. Perhaps the complete picture may become clearer as pieces of this puzzle are sought in various directions. With this in mind, experiences of a large rehabilitation center are presented in the hope of clarifying some of these questions. The data were analyzed (1) to ascertain whether certain characteristics regularly occurred with chronic low back pain, (2) to find whether they could serve as prognostic criteria for restoration to productive status and (3) to determine the influence of a total rehabilitation program on the course of this special disability. Although it was not anticipated that light would be thrown on the etiological factors of chronic disabling back pain, it was hoped that this study might indicate constructive action leading to earlier return to gainful employment.

It should be emphasized that the individual with back pain of short duration returning early to work is not included in the sample population. The individuals referred to the rehabilitation center comprised those who were refractory to established treatment and remained months or years on the compensation rolls because of alleged chronic back pain following injury.

One hundred consecutive cases of low back pain were analyzed. These were seen during a period of three years, 1952 to 1954. All were referred by various insurance companies. Previous accumulated medical records were scrutinized from the point of view of diagnosis and treatment. Each individual received a complete medical examination on admission, often with the benefit of orthopedic and neurosurgical consultations as well as fresh x-ray studies. In addition, a large percentage were interviewed by the staff psychiatrist as well as by clinical psychologists to provide an understanding of the personality structure and emotional conflicts. Social and vocational data also contributed toward an understanding of the various psychological forces at play.

Description of Population Sample

Before turning to the objectives mentioned above, the working sample may profitably be compared to larger groups from a similar source. The individuals comprising this study must of necessity be considered as artificially selected, since they arrived after showing no tendency to improve after months and years. It is, therefore, significant that this group conformed in many characteristics to other groups accumulated without artificial selection.

Age: Table I presents the breakdown by age at onset of injury. The distribution by decades conforms well with that of all 108,000 compensation cases closed in 1949 by the Workmen's Compensation Board of New York State, as well as the ratio of individuals below and above 40 years of age (44% and 56% as against 45% and 55% for all compensated cases).[2] The age factor was also in close agreement with 160 low back cases reported by Kessler,[3] whose sample was based on selection by work and disability patterns rather than on consecutiveness.

TABLE I.
DISTRIBUTION OF AGE AT ONSET OF INJURY

Age in Years	Number and Percent
Under 21	4
21 - 30	18
31 - 40	22
41 - 50	30 . . . median age
51 - 60	19
Over 60	7
Total	100

Sex: Of the 100 individuals, 87% were males and 13% were females. Those figures are in exact agreement with the cases closed in 1949 and almost identical with Kessler's series.

Occupation: The sample was predominantly drawn from the unskilled category, comprising 61% of the total. The skilled and semiskilled constituted 29%; and white collar workers, 10%. In *all* closed compensation cases of 1949 the ratio of unskilled to semi-and skilled workers was reversed;[2] the same holds true for Kessler's group of low back disability.[3] In the latter study, however, one criterion of selection was occupation. Hence, our figures may be more nearly indicative of the true vocational picture in chronic

back disorders unresponsive to treatment and suggests the not implausible fact the laborers are more prone to such injury.

Time Elapsed after Injury: By "time elapsed" is meant the duration from onset of injury to the initial examination at the rehabilitation center. Table II demonstrates that one-half the total cases admitted in 1952 to 1954 were referred after 18 months. Only 12% were directed to a rehabilitation center by the sixth month and 23% were referred after a passage of three or more years after injury. In Kessler's analysis, 52% fell in the period exceeding three years, but, again, cases were selected for prolonged disability.[3] For our purposes we shall regard an elapsed time of 18 months as the beginning of long term disability, inasmuch as injuries requiring operative procedures should be fully healed in about a year. Certainly, a low back "strain" should have been resolved much sooner. From this point of view, half our cases may be classed as prolonged disability.

TABLE II.
MONTHS ELAPSED BETWEEN ONSET OF DISABILITY AND ADMISSION FOR REHABILITATION

Months	Number and Percent	Months	Number and Percent
4-6	12	43-48	3
7-12	22	49-54	4
13-18	16	55-60	2
19-24	13	61-66	3
25-30	6		
31-36	8	Over 6 years	5
37-42	6	Total	100

Given a sample population of low back disorder that is typical of all industrial injuries in respect to age and sex, composed predominantly of unskilled workers and represented by prolonged invalidism in half its numbers, what are the associated and predictive characteristics and how effective is a planned, comprehensive rehabilitation program? Of the 100 cases, 10 were eliminated from consideration for the following reasons: three required further diagnostic study for conditions other than orthopedic; in five, no further action was authorized by the carrier beyond evaluation; one revealed a diagnosis of syphilis of the central nervous system; one died accidentally shortly after admission.

Outcome of Rehabilitation

The remaining 90 cases admitted to the program were classified as "failure" or "success." The failure category comprised all patients who refused to accept treatment, who left before the termination of the prescribed program, whether physical, vocational or both, or who were discharged unimproved. The success category included those who were able to return to work improved in regard to pain after medical treatment alone; those who were placed in new jobs and those who embarked upon a vocational training program at the Institute, regardless of the persistence of symptoms. The criteria for this category, therefore, disregarded the presence of back pain as long as the patient could successfully resume some constructive endeavor. In this sense, our judgment of improvement differs from the current practice in compensation law, which establishes the abolition of pain as the paramount criterion for cure and settlement. That absolute elimination of symptoms is not essential to rehabilitation, is brought out by this study. In fact, as shall be shown later, complete reliance upon manifestation of pain as the index of disability may lead one to overlook the crux of the difficulty in many a chronic low back invalid: pain is often psychosomatic rather than physical, and requires manipulation of the total environment, not merely of the musculoskeletal system.

Of the 90 patients admitted, one out of four individuals displayed a favorable response according to the above-mentioned standards (Table III). Half of these successes were still symptomatic, yet in spite of their difficulty could respond by resumption of work or entrance into retraining. Many of these fell into the prolonged disability group (over 18 months). As will be shown later, rehabilitation in the total sense more than pays for itself in financial terms, to say nothing of the more important human values.

While 25% may be regarded as small success by some, it should be remembered that the 90 patients are representative of a small, difficult group with industrial low back injuries. They have evolved by a process of natural selection resulting from the interplay of complicated individual, legal and economic forces. They have been resistant to accepted medical treatment and in many instances to surgical management. They comprise an irreducible minimum who are often referred to a rehabilitation center as a last resort.

TABLE III.
OUTCOME AFTER PHYSICAL AND/OR VOCATIONAL REHABILITATION

Successes	Number	Percent
Returned to work, improved	6	6.7
Placed, improved	2	2.2
Entered retraining, improved	3	3.3
Placed, symptomatic	4	4.5
Entered retraining, symptomatic	7	7.8
Total	22	24.5
Failures	68	75.5

At this point, having established a polar division of the group on the basis of outcome, important to both physician and carrier, various possible determinants of failure and success were analyzed.

Diagnostic Categories and Outcome: One re-

lationship that readily presents itself is that of diagnosis and outcome (pathologicoanatomical categories were adhered to when possible). A large residue, such as chronic lumbosacral sprain, chronic sacroiliac strain, unstable low back (in the absence of satisfactory criteria by x-ray), low back syndrome (without organic findings), fibrositis and myofasciitis were lumped together under the heading of "low back pain." Our justification rests on two grounds: the absence or vagueness of the physical findings, and general disagreement as to the validity of these diagnoses on pathological grounds. In doing so, it is granted that some error may be introduced by including organic conditions under "low back pain," as knowledge of back disorders are still imperfect. Furthermore, a particular label may reflect the bias of the examiners. At any rate, from Table IV it is evident that almost half the group fell into the nonspecific category of low back pain and of these only one-seventh represented a successful rehabilitation outcome. In contrast, neglecting the "miscellaneous" group for the moment, of 41 patients with definite or presumptive objective findings, three-eighths succeeded. Are these ratios significantly valid to suggest a basis for prediction of outcome? To answer this question the findings were further tested by reducing the diagnostic groups to two types, "organicity" and "no definite organicity." All findings were considered from the onset of injury to the examination at admission. The low back pain group (43) was regarded as "nonorganic." To these were added three individuals

TABLE IV.
RELATIONSHIP OF DIAGNOSIS TO OUTCOME

Outcome	Low Back Pain	Herniated Nucleus Pulposis: Verified by Operation	Herniated Nucleus Pulposis: Suspected Clinically	Vert. Fract.	Spondylolisthesis	Misc.*	Total
Failure	37	13	3	8	2	5	68
Success	6	7	4	3	1	1	22
Total	43	20	7	11	3	6	90

*Misc.: 1 — laminectomy, no disc, but osteoarthritis.
2 — myositis: 1 of 4 mos., 1 of 10 mos. duration.
1 — curvature of spine and neurosis
2 — no orthopedic diagnosis.

from the miscellaneous column as follows: Referring to Table IV, there were two cases with back pain but no orthopedic or, indeed, any other organic diagnosis; and a third labelled, prior to admission, as neurosis in spite of the presence of kyphoscoliosis. Forty-one readily fell into a group with organic diagnoses (Table IV). To these were added three cases, a laminectomized patient with root irritation regarded as arising from osteoarthritis; and two cases of myositis of 10 and four months duration owing to sprain. Although the entire selection is somewhat arbitrary, it must be admitted to err consciously in favor of the definite anatomical diagnosis, provided one agrees that "chronic low back sprain," etc., are not true entities at the present state of our knowledge.

We can now compare statistically the distribution of diagnostic types between the outcome pair (Table V). Organicity was associated with success in about one of three cases; no definite organicity, in about one of eight. Applying the X^2 test of significance it may, furthermore, be said that the sample under consideration has only a 2% chance of having been drawn from a universe in which there is no such association at all. These ratios suggest some association between diagnostic type and outcome. As any clue toward the prediction of chronic invalidism is important, the relationship was further pursued, perhaps more definitively, by considering the personality structure of the invalids.

TABLE V.
DISTRIBUTION OF DIAGNOSTIC TYPE BETWEEN SUCCESS AND FAILURE OF REHABILITATION PROGRAM

Outcome	No Definite Organicity	Organicity
	Number	Number
Failure	40	28
Success	6	16
Total	46	44
$X^2 = 5.419$		$P = 0.02$

Personality Structure and Outcome

It is emphasized by workers in the field of disability that the nature of psychological function is one of the important determinants to final outcome. Disability represents an assault on the personality to which some can successfully react while others succumb. In chronic low back disability encountered in industry the same implications hold.[4,5,6] These implications, however, are not well recognized or considered by many physicians and carriers.

It was, therefore, basic to this analysis concerned with factors favoring or retarding return of the injured to work, to assess the personality structure of our group and ascertain its prognostic significance for final outcome as herein defined. This knowledge, furthermore, could afford better insight into the management of chronic industrial disabilities. Thus, if emotional disturbance correlated with failure, it would be important for physician and carrier alike to detect early the patient with weak personality. Timely preventive measures could be introduced which might spare him useless physical treatment, return him more rapidly to economic security and in turn save carrier and employer needless expense.

In 68 cases adequate inferences could be made regarding personality function from psychiatric

and psychological interviews. From projective and descriptive tests, coupled with social and vocational interviews, a personality picture could be drawn in terms of psychological liabilities and assets. These tests, broadly speaking, probe at patient's attitudes, at what he is as a person. Briefly, the battery included:

1. Tests of personality
   (a) Rorschach: patient projects his personality into what he sees. That is, he so perceives the ink blots as to allow the examiner insight into his reality attitudes, personal relationships, needs, self-concepts and fantasies. It reveals his defenses versus his conflicts and awareness of them.
   (b) Thematic Apperception: by asking patient to tell stories based on pictures, the test gives some information about his wishes, fantasies and needs, which may be expressed in his neurotic problem.
   (c) Figure Drawing: insight is afforded of patient's self-concepts, self-attitudes, awareness, attitudes toward both sexes.
2. Wechsler-Bellevue test: primarily gives functioning of intellect and abstract thinking; this test is not too important for this analysis.
3. Psychiatric evaluation: aims at deriving an immediate picture of the conscious view of surroundings, and conscious behavior.

Where there were indications of resolving insoluble conflicts by escape through injury, the patient was classified as a weak personality; possession of assets considered useful for adjustment to stressful situations, and ability to handle anxiety and to master the environment marked him as a favorable personality. Table VI presents the various personality characteristics found by examination and forming the basis of this dichotomy. When matched against outcome, the distribution of success and failure in terms of psychological liabilities and assets was striking. Only one of nine with weak personality structure succeeded as against better than four of five with favorable personality characteristics (Table VII). According to the X^2 test, such a high degree of association between the two pairs of dichotomies could only have been obtained by chance from a universe representing no such association at a probability of less than one in a thousand ($P < 0.001$).

TABLE VI.
PERSONALITY STRUCTURE SUGGESTING WEAK PERSONALITY

*Dependency	Immaturity
Apathy	Schizoid Trends
Depression	Mood Swings
Defeatism	Withdrawal
*Anxiety	Fearfulness
Hysteria	Inadequacy
Hostility	Repressed Aggression
Phobias	Evasiveness
Deterioration of Intellectual Functions	
Resort to Alcoholism	

*over 50%

PERSONALITY STRUCTURE SUGGESTING FAVORABLE PERSONALITY

Diligence	Enthusiasm for Work
Composure	Motivation
Amiability	Cooperation
Confidence	Stability

TABLE VII.
PERSONALITY STRUCTURE AS RELATED TO SUCCESS AND FAILURE IN REHABILITATION

Outcome	Weak Personality	Favorable Personality
	Number	Number
Failure	46	3
Success	6	13
Total	52	16
$X^2 = 26.171$		$P < 0.001$

Personality and Diagnostic Types: It has been shown that chronic low back injuries may fail to profit from a rehabilitation program when both no definite organicity and a weak personality structure exists. This suggests that when the latter two characteristics coincide in a case, the suspicion of psychogenic disorder becomes stronger. But if this situation is unrecognized, a nonspecific anatomical diagnosis may be entertained to the exclusion of a predominantly psychogenic disorder. With this in mind, in 72 cases in which data were available the occurrence of diagnostic types in each of the personality categories was found in order to test the consistency of the two previous comparisons presented in Tables V and VII. Table VIII reveals the incidence of organicity or nonorganicity in the two personality types. Thus, with a diagnosis implying no definite pathology as herein defined, only one in 34 nonorganic cases was classified as favorable personality; but 15 of 38 cases of organic disease fell into the favorable category. The X^2 test indicated a probability of less than one in 1,000 that this finding could be sampled from a large population in which no such relationship existed. It is suggested, therefore, that a patient with prolonged disability labeled "chronic low back strain" etc., especially in the absence of

TABLE VIII.
PRESENCE OR ABSENCE OF ORGANICITY AS RELATED TO PERSONALITY STRUCTURE

	No Definite Organicity	Organicity
	Number	Number
Weak Personality	33	23
Favorable Personality	1	15
Total	34	38
$X^2 = 11.823$		$P < 0.001$

organic signs, is a suspect of psychogenic disorder and should be investigated in this respect rather than continuing an endless round of physical and pharmacologic treatment to the exclusion of all else. In the face of chronic psychological invalidism, so-called conservative medical treatment is not conservative at all. Since some 60% with organic findings also exhibited weak personality structure, the possibility may also be entertained that psychogenic factors reinforce symptoms of persistent organic disease.

The question arises whether the underlying personality structure predating the injury is the significant factor in this psychogenic disorder, or whether the assault upon the personality in some individuals produces a reaction unfavorable to rehabilitation regardless of the preexisting status. This question can not be answered, but probably both alternatives apply. More important, however, may be the duration of the disability which may tend to fix certain undesirable characteristics prejudicing, in turn, early return to independence. In other words, if this is so, do most of the successes occur early in the disability? In Table IX, the distribution of success and failure is shown in relation to time of disability by 18 month intervals. The early cases, regarded in this discussion as of 18 months' duration, included 11 successes or one-half the total; the remaining 11 were rehabilitated even after prolonged disability from one and one-half to eight years. This higher density in early (as opposed to late) cases may appear to favor the opinion that the extent of chronicity militates against success. A glance at Table IX, however, reveals that in the first and subsequent 18-month periods the success rates were substantially the same. In the 72-month interval the finding of 60% was fortuitous; the individuals were revealed to have high degrees of hand skills favorable for proper vocational replacement. It would, at any rate, be consistent with the facts herein presented, that time of disability in itself is not prejudicial, provided the benefit of comprehensive rehabilitation is coupled with receptivity of the individual's make-up. These findings argue against rejection of candidates for rehabilitation at least up to eight years. The same conclusion was reached in a similar analysis by a carrier.[7]

TABLE IX.
INCIDENCE OF SUCCESS AT 18-MONTH INTERVALS FROM ONSET OF DISABILITY IN 90 CASES

Duration	No. Success	No. Failures	% Success	% Failures	No. Total
18 mos.	11	32	26	74	43
36 mos.	5	19	20	80	24
54 mos.	2	11	16	84	13
72 mos.	3	2	60	40	5
over 6 yrs.	1	4	25	75	5
Total	11	36	—	—	47

Practical Benefits of Rehabilitation

Another argument for comprehensive rehabilitation in the handling of chronic disability stems from the fact that six successful terminations were derived from the weak personality group. Perhaps others in the same category with proper management might have been returned to independence earlier. The same thought applies to the late cases beyond one and one-half years who had a successful outcome. What saving could have been effected in eleven seen one and one-half years after disability? Counting compensation payments and medical costs alone, the total expenditure was at least $90,000 extending over the periods of disability.[3] Early referral to a rehabilitation center might have saved some $60,000 during this time. Since one large carrier has estimated that the cost of successfully rehabilitating low back cases during the year 1951-1952 was $188 per patient,[7] in our instance $2,070 spent would have meant $60,000 saved! About $80,000 may be added to this saving in the form of earned income by the patients returned earlier to work. Additional savings may be similarly calculated for the earlier group. One does not have to belabor the point that rehabilitation is good business, as the progressive carriers are already convinced. The problem is to refer patients with chronic low back or other disorders early enough to an agency where psychological orientation is as much a part of the approach as the physical one.

One of the problems in early referral lies in the detection of those factors associated with prolonged chronic disability. If, after six months to a year, depending on the particular case, no improvement is forthcoming, persistence in purely physical or pharmacological agents will probably be of no avail. Kessler found that physical therapy in prolonged disability added nothing of positive value.[3] Suspicion of chronic invalidism will be strengthened if a diagnosis of "chronic low back strain" and the like without definite physical findings are consistently made. Psychogenic factors must then be looked for. If further evaluation along these lines reveal weak personality function, psychological tactics must be entertained to prevent the hardening of personality disorders associated with and reacting upon the disability. In this study and others[4] detection of personality disorder came late and undoubtedly lengthened the period of illness.

Given a patient with a "nonorganic" diagnosis and a weak personality, does he respond to an integrated rehabilitation effort, although continuing to remain incapacitated on ordinary management? Some workers have remained unenthusiastic if not skeptical.[5] Reference to Table IX reveals that of 47 late cases (19 to 96 months

duration), 11, or 23%, came to a successful conclusion. Prior to admission these patients presented the usual impression of being hopelessly involved with their disorder uninfluenced by rounds of heating, rubbing and injecting. Reference has already been made to the dollars that may be saved, but in the final analysis we deal with lives, and hence every possible avenue should be explored no matter how unpromising it may appear. But it should be emphasized, a 23% salvage rate in late cases and a 26% rate in early cases are no slight gains.

The rate in late cases represents a favorable beginning. It is an enormous advance over results by measures rooted in the unbending organic approach. We have noted that 56 out of 72 patients (Table VIII) in whom data were available, displayed strong evidence of impaired personality function. That is, 78% could have psychogenic back disorder or one in which functional factors were important. Kessler also came to the conclusion that 80% of his 160 cases represented psychogenic low back pain.[3] In this light, the fact that 76% of all cases failed after referral to the rehabilitation center does not warrant pessimism. Workers in the field of psychosomatic disease have long emphasized the need for early discovery of psychogenic difficulties. Two-thirds of our case load were admitted from one to eight years after injury. If timing could be improved to six months, particularly in the "nonorganic group," the salvage rate gives promise of becoming even more favorable.

It has been noted that reports on patients coming to the rehabilitation center have been cognizant of the psychogenic implications of the disease. The matter, however, often rested in the mere statement and no further recommendations were made. At times it appeared that the patient was to be censured for frustrating sound medical treatment by his irritating psychological difficulties. I am not referring to malingering.

Treatment

If one accepts the extensive work demonstrating physiological changes produced by emotional stress, the same recognition should be shown psychogenic back disorders. Perhaps it is overlooked because the mechanism of psychogenic back pain is obscure. Much has been written about the "psychodynamics" of chronic disability. One illuminating work is well-known.[8] But it would be better to refer to the "dynamics," physiological as well as psychological, of the disease, each receiving proper focus in explaining the evolution of "psychogenic" back pain. Such an outlook may lead to understanding and perhaps more realistic treatment.

The following scheme in the accompanying figure attempts to illustrate various physiological and psychological findings experimentally adduced by several workers to explain one type of dynamics where anxiety is paramount. Individuals with high degrees of anxiety tend to show diffuse overactivity of muscles as demonstrated by EMG, evidence of gross muscle contraction and complaints of muscle tension. Important for our discussion, areas already symptomatic readily showed high degrees of overactivity by physiological methods and became overt clinically as back pain, headache, etc.[9,10,11,12,13] Thus a vicious cycle is induced which outlasts the local tissue disturbance consequent to the original injury. Treatment, physiological (heat, exercises, local anesthetics, spasmolytic and tranquilizing drugs) and psychological, readily suggests itself to interrupt the mechanism at various points. At times in our experience, transferring preoccupation with the local site of injury into absorption with vocational training has been the deciding factor in restoring a patient to usefulness. In our program more usually supportive psychotherapy, physical treatment and vocational exploration, placement or training have been combined.

Summary

Prolonged low back disability in 100 cases treated at a rehabilitation center have been studied in the hope of revealing useful information aiding in the management of such patients. These represented a hard core of industrial invalids refractory to prolonged medical and surgical treatment.

The group compared closely in age and sex with that found in a population of 100,000 cases of all industrial injuries. Sixty-one per cent were unskilled workers. One-half the entire group were disabled from 18 to 96 months.

Of 90 patients admitted for total rehabilitation services (medical, psychological, vocational), 24.5% succeeded in attaining goals set for them.

There was a high degree of association between success in rehabilitation and favorable personality characteristics. Disordered or weak personality function often went with failure, yet a few of these were successfully rehabilitated.

The combination of weak personality structure and nonspecific organic diagnosis (such as "fibrositis," "chronic low back strain," etc.) in the face of chronic disability due to low back pain should alert the physician to suspect a psychogenic disorder. Carrier and compensation boards should seek physical and pharmacological treatment along with psychological and even vocational management for these patients.

The mechanism of psychogenic back pain is discussed and suggestions given for physical, pharmacological, psychological and vocational treatment. This applies to similar disorders.

Long duration of disability in itself is not prejudicial to rehabilitation and should not lead to rejection of total measures. A saving of many tens of thousands of dollars could have been effected if patients, herein studied, had been referred earlier.

———This study was conducted at Institute for Crippled and Disabled, New York.

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Diabetes

Diabetes is a metabolic disease first described 3500 years ago, but whose cause is still unknown. At its center it is a failure by the pancreas to produce enough of a hormone called insulin, which plays a key role (also basically unknown) in carbohydrate metabolism. Daily injections of insulin now enable almost all diabetics to lead a nearly normal life, though all must also watch their diets.

Oral insulin substitutes have been under trial almost since the discovery of insulin itself. The first modern drug of this kind to come into general use was discovered in 1954. This was tolbutamide, developed in Germany by Farbwerke Hoechst. It is now widely used, and a related compound, carbutamide, has also been studied extensively. Chemically, these two drugs and Diabinese, Pfizer's oral antidiabetic drug (chlorpropamide), are all classed as sulfonylureas; they are related to the sulfa drugs. They all appear to require that the patient's pancreas still be producing insulin on a small (though normally insufficient) scale.

These drugs control the most common form of diabetes, particularly in patients who are overweight and have a mild or moderate form of the disease, thus freeing them from the need for daily injections. Juvenile diabetics and patients requiring very large daily doses of insulin generally are not helped by the oral drugs, though there are occasional exceptions.

The Chronic Diseases

Extraordinary progress in the control of the acute diseases has resulted in steadily growing importance of the chronic diseases as causes of death in the United States. The acute diseases — those developing rapidly or coming speedily to a crisis — accounted for over 40 percent of the deaths at the turn of the century; currently the proportion is not quite 10 percent. During the same period the chronic diseases — those of long duration, or characterized by slowly progressing symptoms — increased from 46 percent of the deaths to 81 percent.

Mellon Institute, Pittsburgh, home of Industrial Hygiene Foundation.

23rd Annual Meeting.... INDUSTRIAL HYGIENE FOUNDATION

Left to right: Dr. H. F. Smyth, Jr., Union Carbide Corporation and Mellon Institute; Lawrence A. Coleman, Allied Chemical Corporation; Dr. Anna M. Baetjer, The Johns Hopkins University; Dr. Frank Princi, University of Cincinnati College of Medicine; J. T. Fuess, Distillation Products Industries Division of Eastman Kodak Company.

At the Twenty-Third Annual Meeting held October 29 and 30, notable changes in the Industrial Hygiene Foundation staff were announced. Mr. Andrew Fletcher, long the Chairman of the Board of Trustees, retired and was succeeded by Dr. William P. Yant, Director of Research, Mine Safety Appliances Company of Pittsburgh. Dr. Richard Walmer, for many years the Foundation's Managing Director, retired and to this post was elected Dr. H. H. Schrenk, already a member of the Foundation staff. While some curtailments in the scope of the Foundation's program have proved necessary, the publication of the monthly *Industrial Hygiene Digest*, an occupational health abstract periodical, will continue although its distribution as heretofore will be limited to industrial members and a restricted number of libraries and individuals.

In the sectional scientific programs three presentations were outstanding:

In the medical conference Dr. Paul Gross, a research pathologist of the Foundation, reported

upon the effects of various dusts in regard to the evolution of tuberculosis. In this country there has long been adherence to the belief that silica in the form of dust is the only material highly active in the progression of pulmonary tuberculosis. Dr. Gross' work, limited to animals and under circumstances of intensive exposure, has determined that various other dusts heretofore accepted as essentially innocuous are capable of contributing to the evolution of tuberculosis. The number of such dusts investigated includes silicon carbide, talc and coal. In the absence of tuberculosis these dusty materials remain relatively harmless in their action on lung tissues. It is noteworthy that in this study no human cases were involved and the degree of exposure provided for animals may exceed that expectable for human beings at work.

In the legal conference Dr. Paul Dudley White in an address, "Problems Incident to Employment of the Cardiac in Industry," took the position that not only is work *not* a causative factor of heart disease under other than extraordinary circumstances, but that work may be highly desirable for the majority of cardiacs as a beneficent contributor in the general therapeutic regime.

In the joint medical, legal and toxicological conference, a panel session was devoted to the American Medical Association's proposed act for labeling hazardous substances. The moderator of this session was Dr. Anna M. Baetjer and the chief participants were Dr. H. F. Smyth, Jr., Mr. Lawrence A. Coleman, Mr. J. T. Fuess and Dr. Frank Princi.

The foremost areas in which benefit might be anticipated from the labeling of dangerous materials are industry and the household. Promptly it was asserted by these speakers that the respective requirements for the work place and the household are so different that no single act suitable for both appeared to be feasible. The specifications of the AMA proposal are so stringent that by some it was deemed likely that all substances except water might be subject to some degree of precautionary labeling.

The AMA proposed act, which is only in the draft stage, requires laboratory testing under standard and rigid conditions. Moreover, all substances, and by the thousands, now on the market would be subject to such laboratory examination. It is unlikely that all laboratory personnel and facilities now available working exclusively on this project ever might achieve the work involved.

A number of other organizations and agencies over the country has activities under way in connection with the labeling of potentially harmful agents, and some are in conflict with the AMA objectives.

While no finite conclusions were reached by this discussion group, it is patent that the AMA act as it now stands will not be accorded hearty support from all quarters.

Other program items of newness and significance were presentations by Dr. John A. Zapp, Director of the Haskell Laboratory of the E. I. du Pont de Nemours & Company, on the toxicity of diisocyanates; by Dr. Norman G. White, Manager of Industrial Hygiene, Shell Chemical Corporation, on the toxicity of epoxy resins; and by Mr. Franklin V. Taylor, Engineering Psychology Branch of the United States Naval Research Laboratory, on the human as an engineering component.

Seven of the Members of the Legal Committee, IHF, with Dr. Paul Dudley White (front, center), at the Legal Conference held Wednesday afternoon, October 29, in Hotel Webster Hall, Pittsburgh. Left to right: Hugh M. Jackson, Manager, Industrial Health Program, Johns-Manville Corporation (Mr. Jackson was chairman of the session); Theodore Hetzler, Jr., attorney, National Association of Mutual Casualty Companies; James Hill, Legal Department, Ford Motor Company; Douglas Soutar, Director of Industrial Relations, American Smelting & Refining Company; Dr. White; Andrew Kalmykow, Assistant Manager, Casualty Department, Association of Casualty and Surety Companies; Don Stitt, Assistant General Manager, Industrial Relations, Continental Can Company; Theodore C. Waters, Chairman, Legal Committee, IHF.

Ventilation for Human Occupancy

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A Disaster of Historic Import

Disasters caused by ventilation inadequacies in which humans have perished are only imperfectly recorded in technical literature. The most infamous of such episodes, and probably the only one that many will remember, is the Black Hole of Calcutta. Many persons believe that this tragedy was brought about by lack of oxygen in the atmosphere of those imprisoned. But the evidence strongly indicates that the high mortality among the English soldiers imprisoned in the Black Hole in 1756 was due primarily to heat exhaustion brought about by severe overcrowding, lack of air movement and unusually hot weather, and crushing injuries inflicted by a frenzied crowd on those collapsed. There was an almost complete lack of drinking water, and intolerable thirst ensued shortly after confinement. But the tragedy of the Black Hole of Calcutta has been well described. Notably, there is the account of the surviving officer in command, contained in the Annual Register of Great Britain for 1758.[1]

The purpose of this writing is to describe a tragedy of faulty ventilation which is little known and has received scant mention. It is perhaps unique because of its severity and because its characteristics suggest the conclusion that lack of oxygen was the primary causative factor. The incident took place in 1848 aboard ship in the North Atlantic off the coast of Ireland. The following details are based on analysis of accounts in *The Times* (London) of December, 1848.

The steamer Londonderry left Sligo (Ireland) on Friday, December 1, 1848, for Liverpool (England) with 150 to 190 passengers on board. All except three were steerage passengers and most were emigrants on their way to America (by means of a different ship from Liverpool). During the voyage, the ship encountered a storm so severe that the captain ordered all of the steerage passengers below and into the steerage cabin which was only about 18 feet in length, 10 to 12 feet in width, and seven feet high. Into this cabin perhaps 150 persons were crowded. The three first-class passengers occupied a separate cabin. Then, with apparent fear that water would enter the companion, it was closed and a tarpaulin nailed over it. The companion was the only opening to the steerage cabin to serve as a vent, and when this was closed there was no opening whatever for air to enter. There followed, as reported by survivors, a period of agony and horror in which the inmates shrieked for aid. But with the raging storm in progress, and the crew busily engaged in keeping the ship under control, the cries were either not heard or given no attention. Finally, one man managed to break an opening in the tarpaulin of the companion and force himself out. He notified the mate who became instantly alarmed. Then, carrying a lantern, the mate went down to render assistance. But on entering the cabin, the light was immediately extinguished. A second was obtained, but this too was extinguished. Finally, when the tarpaulin was completely removed, fresh air entered the cabin, and the awful sight of the living, the dying and the dead was disclosed.

The vessel docked at Londonderry (Ireland) on Sunday morning. Authorities hastened to the ship, and the captain, crew and surviving passengers were arrested pending investigation. Seventy-two persons were dead; the bodies in the steerage cabin were piled four deep over one other. Each corpse presented the appearance of death by suffocation; many were blackened, others covered with blood from mouth and nose, and from wounds caused by trampling and violence in the frantic struggle for escape.

The captain and first and second mates of the Londonderry were ordered by the Coroner's Jury to be held for manslaughter, but results of their trial have not been found. In the strongest terms, accusations of negligence and indifference were leveled at them. There had been resistance on the part of the passengers to being forced into the steerage cabin and the public could not under-

stand why an order to seal the companion was given. Also, there had been an unexplained delay of at least 12 hours between the time the captain learned of the passengers' plight and his heading the ship to dock. An editorial urged that government compel ship owners and operators to accept passengers only to the limit of cabin accommodations.

Basic to both the Black Hole and Londonderry disasters was severe overcrowding in a confined space. What makes one different from the other is the mechanism of the action causing collapse and death. The possibility of severe lack of oxygen developing in any space of human habitation is given so little attention it seems that an analysis of these incidents with reference to this factor should be made.

In the Black Hole there were two windows which, although heavily barred, permitted some entry and circulation of air. This in itself is convincing that there was no great lack of oxygen within, although temperature and humidity certainly were intolerable. In contrast, aboard the Londonderry, there is every evidence that the steerage cabin was tightly sealed, preventing all but the most insignificant interchange of air with the outside. The extinguishment, one after the other, of two lanterns carried into the confinement further supports the contention that there was a definite lack of oxygen. Also, the appearance of the bodies confirmed true suffocation. Finally, certain classic experiments (such as those of Hill[2] in which subjects were confined in a closed chamber to the point where oxygen content dropped to 16% to 17% and carbon dioxide content rose to 3% to 4%) showed no physiological effects of confinement other than those due to heat and humidity, so it can only be pointed out that in this shipboard disaster the closed space was more crowded and the time of exposure considerably greater than in the experiments.

Today, planning for ventilation for human occupancy is properly directed toward controlling air temperature, humidity and movement, body odors and tobacco smoke. Certainly in all ordinary structures and situations, decreased oxygen and increased carbon dioxide contents of the atmosphere are not likely to occur to the extent of physiological significance. But the Londonderry incident poignantly illustrates that under unusual circumstances, such as when overcrowding is forced upon persons in a closed space, a calamitous situation may develop, and that the consequences may be serious lack of oxygen, asphyxia, and death.

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Useless Worry

Worry is the occupational disease of the times, according to Mardo Williams in the November 3 issue of the Columbus Ohio *Dispatch*. He quotes a well known doctor-writer as saying that 40 percent of most people's worries never happen; 30 percent are about things in the past; 12 percent are needless health worries; petty miscellaneous worries account for 10 percent of the remainder; and the real, legitimate worries amount to only eight percent. The doctor concluded, "Obviously, worry is a luxury few people can afford." Constructive thinking and activity is suggested as a substitute: "Two lines of thought can't occupy the mind at the same time."

—Columbia Ohio *Dispatch*, November 3, 1958.

A case report on the strange phenomenon that turns men blue

METHEMOGLOBINEMIA

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Dayton Malleable Iron Co.,
Nitrogen Division, Allied
Chemical and Dye Corporation

Ordinarily, methemoglobinemia is one symptom of poisoning by aromatic nitro and amine compounds. These compounds may be absorbed through the skin or respiratory tract, or they may be ingested. Methemoglobinemia may be produced by a small amount of these compounds. The formation of methemoglobin in the blood stream may be rapidly followed by a reversible reaction to oxyhemoglobin. When the concentration in the blood is about 20% to 30% the patient may feel perfectly well but his color may vary from a light gray to a dark blue. From about 25% to 50% or over, his symptoms may vary between weakness, nausea, headache and a tired feeling. He may have one or all of these symptoms. When his saturation point reaches about 75% he will show some dyspnea, marked weakness, some aching, increased pulse rate and he may even become comatose. A reconversion of his methemoglobinemia to oxyhemoglobin is accomplished without any damage to his red blood cells or bone marrow and may result in 48 hours with appropriate medication. Prompt treatment is essential for a rapid recovery. This involves the early recognition of his cyanosis and aids in minimizing the effects of the aromatic nitro and amino compounds.

In the treatment of this condition it is important to know what percentage of methemoglobinemia exists. The treatment varies with the percentage that can be determined by a spectrophotometer. A Coleman Universal, Model 11, has been found to be satisfactory.

If the methemoglobin reading is 35% or less, usually bed rest, glucose drinks and oxygen inhalation are sufficient for recovery. If more than 35%, intravenous 5% glucose is also of value. However, the drug regarded to be of most value at present is methylene blue. It may be given intravenously or orally. This was first reported in 1933 by William and Chaltin, Steel and Spink. Wendel later reported that using 0.2% solution per Kg of body weight would convert all of the methemoglobinemia into functioning hemoglobin in about 45 minutes, even when the concentration was initially as high as 35% to 40%.

Injecting this dye may produce ill effects, and it should be administered with caution. Hemolytic anemia has been noted following the injection of this dye and rapid injection may produce hives and a severe burning sensation of the lips. Leakage of the dye around the vein may produce necrosis.

Electrocardiographic tracings on patients with a concentration up to 50% show no changes.

Case Report: J. C. W., age 35 years, Caucasian. This man was discovered while undergoing his annual physical examination at a chemical plant. He had an unusual and interesting history. He was obviously deeply cyanotic and stated that he had had cyanosis off and on since age 18. He weighed 180 pounds at that age. He did not realize that he was sick until he was examined by a physician prior to going overseas and was detained in the United States because of bad color. But later he was mistakenly sent overseas and successfully served five years before his discharge.

He had begun to accept his cyanotic condition as usual for him and had been able to continue his activity until a recent episode of upper respiratory infection which tended to sap his strength. He revealed that he had almost continuous frontal headaches with some dizziness, which was more severe on sudden change of position. He also noted some dyspnea on exertion with cardiac palpitation and a "floating sensation" when he became short of breath. He noted that his work tolerance was less than that of companion workers of the same age. His past health was good except for one bout with pneumonia. He stated that he was studied on many occasions while in service, but no diagnosis was forthcoming.

When he returned home from service his family and friends noticed that his color had changed to blue. There is nothing like his condition in his family, and his relatives have nothing resembling it. He has been in many different areas and has changed water supply and changed jobs, but there has been no abatement or improvement of his condition.

In his past and present work for a chemical company for the past seven years, he has not been associated with any aniline dyes. The company manufactures anhydrous ammonia, ammonical liquor, urea, fertilizer, methanol and formaldehyde. All this was checked thoroughly by an industrial engineer and no causative factor was found. His city water was checked for nitrites and found negative.

He had the usual childhood diseases including mumps and chicken pox. Operations included lancing of several carbuncles of back.

His mother expired at 19 of childbirth. His father died at 23 in a coal mine accident. The patient is married and has three healthy children. He smokes approximately two packs of cigarettes a day and his use of alcohol is moderate. He delivered ice for five years and is now a water softener operator.

The physical examination revealed a pleasant white male in no acute distress. There was a marked blue-gray discoloration of his lips and skin with a generalized dusky appearance. No jaundice, icterus or telangiectases was noted. T. 98.0. Pulse 90. BP 116-90. Respirations 24. His nails were cyanotic, but no splintering or hemorrhages were noted. His hair was normal, male. His head was normocephalic with no deformities. Examination of his eyes showed sclerae and conjunctivae to be pale; some severe cyanosis was noted, but no jaundice. The pupils were round and equal and reacted to light and accommodation. A fundoscopic examination revealed no abnormalities. His ears and nose were normal. His teeth were edentulous with full prosthesis. The gums had no gingival hypertrophy. His tongue looked blue-gray in color, with no tremor or deviation in midline. The posterior pharynx was normal. The neck demonstrated no abnormal pulsations or position; thyroid was not enlarged. Lymph nodes showed no palpable cervical, axillary or epitrochlear adenopathy. Examination of the chest revealed no increase in AP and Lateral diameter, and breath sounds were normal. Chest expansion was normal. Heart examination showed PMI to be 10 cm in the fourth interspace, and there were no abnormal pulsations, thrills or shocks. The heart tones were normal and no murmurs were noted. The peripheral vascular system was essentially normal. The abdomen was symmetrical, and showed no distention or scars. The liver edge was palpable two fingerbreadths below the costal margin; however, it was not enlarged to percussion. The spleen and kidneys were normal. Rectal examination was essentially negative. Extremities showed cyanosis with no clubbing. Reflexes were intact and normal.

Laboratory: Admission hemogram showed WBC 6400 with 62% Polys, two Eosinophils, 36 Lymphocytes, total RBC 4.54 Million, 2.8 reticulocytes and 508,480 platelets. Hemoglobin was 15.9 gms. Hematocrit 54. Urinalysis showed a specific gravity of 1.020, pH 5.5, microscopic negative. Blood sugar was 101, BUN 11, alkaline phos. 5.9. The Vandenberg was 0.3 direct, 0.6 indirect. Thymol turbidity was 40 with a normal of 15. Prothrombin was 64%. Serology was negative. Cephalin flocculation negative. Cholesterol was 228 with 71% esters. BSP excretion .7% retention. Arterial oxygen saturation was 89.2 before effort; after effort 93.0. EKG showed right axis deviation with a normal pattern. Chest x-ray showed no evidence of any parenchymal infiltration. The heart and mediastinal structures were normal. Diaphragm, pleurae and osseous thorax show no abnormality. Pulmonary function studies showed: vital capacity, 4770 or 114% of normal; timed vital capacity, 96% normal; maximal breathing capacity, 123.5 or 80% of normal and walking volume was 21 L/Min.

The impression was that there was a slight reduction of the maximal breathing capacity and a slight elevation of the walking ventilation. However, it was felt that these alterations were probably within normal limits and there was no evidence of pulmonary disease. Consultation was held with a cardiologist who gave the opinion that there was no evidence of cardiac disease. Special studies showed that there was an abnormal absorption of light by the blood sample on the Beckman spectrophotometer occurring at a wave length of 630. That could be compatible with methemoglobinemia. By the addition of methylene blue and potassium ferricyanide, this abnormal absorption was relieved. This constituted an adequate diagnostic pattern for methemoglobinemia.

This patient was then placed on 65 mg methylene blue tablets with two tablets twice a day. He was also tried on ascorbic acids with no benefit. However, his entire condition improved on the methylene blue and he has continued working and feels fine while taking his medication, but reverts to his old state with all the symptoms when the methylene blue is stopped.

Since there was no evidence of exposure to any of the aromatic nitro and amine compounds, this case probably falls into the category of idiopathic methemoglobinemia. This is a rare condition and has been reported in the July, 1953, *British Medical Journal* by Drought, White and Sargent. They reported three cases in one family. There has also been a report of Methemoglobinemia in patients with infected kidneys or an infected kidney in which there were multiple abscesses caused by a nitrite-producing bacillus. These cleared upon surgical removal of the offending kidney. This was reported in the July, 1950, *Archives of Internal Medicine* by Evans, Enzer, Eder and Finch.

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Sheep and Goats (and Caterpillars)

Processionary caterpillars feed upon pine needles. They move among the trees in a long procession, one leading and the others following — each with his eyes half closed and his head snugly fitted against the rear extremity of his predecessor.

Jean Henri Fabre, the French naturalist, tried an experiment with these caterpillars. He enticed them to the rim of a large flowerpot, where he succeeded in getting the first one connected with the last one, thus forming a complete circle which started moving around in a procession that had neither beginning nor end.

Fabre expected that after a while they would catch on to the joke — get tired of their useless march and start off in some new direction. But not so.

Through sheer force of habit, the living, creeping circle kept moving around the rim of the pot — around and around, keeping the same relentless pace for seven days and seven nights — and would doubtless have continued longer but for exhaustion and starvation.

An ample supply of food was close at hand, and plainly visible, but it was outside the range of the circle, so they continued along the beaten path.

They were following instinct . . . habit . . . custom . . . tradition . . . precedent . . . past experience . . . they mistook activity for accomplishment. They meant well — but they got nowhere.

—Quality Bakers of America in *Supervisory Management*, November, 1958.

Expansion

Ford Motor Company has constructed two new medical units at its Rouge Plant, to replace the 32-year-old hospital in the "B" building. The first Rouge Hospital was established in 1918 in a farm house purchased with the land when the Rouge was being built. The original staff was composed of four physicians and one extern. The two new units have a combined floor space of 24,700 square feet with 54 separate rooms for examination, etc., in addition to doctors' offices, waiting rooms and all other standard facilities for emergency treatment. A staff of 13 physicians and one dentist, as well as registered nurses, first aid attendants and laboratory technicians are manning the two new hospitals.

—From *Journal of the Michigan State Medical Society*, July, 1958.

PROFILES in Occupational Health

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Industrial Health
University of Glasgow

In champagno veritas; it had all the appearances of a good party and informal as only Americans know how. The occasion was a great one meriting wine, women, song and laughter. The grand old man of American Industrial Medicine, Dr. Robert Legge, accompanied by his charming lady, was being entertained by a few friends at the Palace restaurant, Helsinki, Finland, on the occasion of his 85th birthday. Anna Baetjer, appropriately of Merryland, was trilling alongside Dr. Paddy Fisher of the South Eastern Gas Board, London. His orbicularis oculi, in a state of medicated relaxation, had ceased to contract so that his monocle rested unheeded over his umbilicus. Hedie Kuhn seemed fascinated by this situation. She was meditating what field of vision remained to this fundamental orifice when complicated by middle-age herniation. The old maestro, as befitted the occasion, was in reminiscent mood, ranging over nearly 60 years of men and manners. All the while in rapt attention a young student — for he is still both — Richard Schilling was eagerly collecting the anecdotes of two Tommies, Sir Thomas Oliver and Sir Thomas Legge. This is the means whereby history is continuity. Betimes Richard would laugh hilariously, indeed they all did, but it was not clear whether they were merely bubbling with merriment or merry with bubbly. The atmosphere was stuffy and I well knew that Paddy Fisher and Richard Schilling would have welcomed a tankard of English beer which, *in excelsis*, is the accompaniment of friendly anecdotes.

I could not help recalling an incident at the previous International Congress at Naples. At one of the receptions a group of us were being entertained by a beautiful (though plump) Italian lady who, scorning Asti, was paying generous tribute to champagne. Her eyes sparkled under her sleek black hair. Suddenly she inquired of me, "Who is that tall, handsome Englishman? I should like to meet him." It was Richard, happy and debonair. In any gathering he is not only outstanding, but upstanding, every inch of his ectomorphic six feet. Truly *la donna é mobile!*

Richard Schilling needs no introduction to Industrial Medical Officers in any part of the world for his name and his achievements are known widely. If any should dissent from this statement then all I would comment is that they have not been keeping abreast of the literature. Since 1955 he has been president of the Association of Industrial Medical Officers of Great Britain, an office in which he has upheld the Constitution and continued a great tradition. He graduated M.B.,B.S. at London University in 1937. He is proud to be a St. Thomas's man, though I believe Dolls prefer Guys. Now he has an increasing list of degrees after his name, but Americans are not interested in letters, so many of them are professors. Despite his leanness Richard Schilling is an all-round man as appears from the appointments he has held; Medical Inspector of Factories, Secretary of the Industrial Health Research Board, Reader in Industrial Health at Manchester under Professor Ronald Lane and now in charge of a newly established department of Industrial Health at the London School of Hygiene and Tropical Medicine. Until last year he was Editor of the *British Journal of Industrial Medicine*, which under his direction became one of the outstanding medical journals of the world. His researches into cardiac and respiratory disease (byssinosis) in the Lancashire cotton industry have removed a lot of wool from our eyes. In 1954 he visited the University of Padua to pay tribute to Ramazzini. Now he is a member of the Thackrah Club. He walks in the steps of the masters, mindful of the aphorism that "to be linked to great traditions is to be pledged to great responsibilities."

His new appointment at the London School of Hygiene is a heavy assignment, for it carries no less than the responsibility of leading the future development of Industrial Medicine in Great Britain in the fields of practice, research and teaching. He has the capability and great personal charm. But come to London and see for yourself. Richard Schilling and a tankard of beer are among the great catalysts of international friendship in industrial medicine.

Death Rates and Diseases

Progress in the control of the acute diseases is illustrated by the experience for pneumonia and influenza. At the beginning of the century, these diseases had a combined death rate of about 200 per 100,000 population and led all causes of death. In recent years they have ranked sixth, with a death rate averaging less than 30 per 100,000. Other acute diseases, including typhoid fever, diarrhea and enteritis, diphtheria, measles, scarlet fever, and whooping cough, have been reduced to the vanishing point among the causes of death.

The major cardiovascular-renal diseases and cancer currently account for 54 percent and 16 percent, respectively, of all deaths. Thus, together they now include 70 percent of the total mortality. Tuberculosis is the prime exception to the general trend for the chronic diseases, the statisticians point out. The ratio of tuberculosis deaths to total deaths declined from 11 percent in the early years of the century to only 1 percent in 1955. At the same time the tuberculosis death rate fell from nearly 200 to less than 10 per 100,000.

Dull Job?

A nine page photo spread, entitled "Dull Job?" in an employee magazine of International Harvester Company, Chicago, tackles a usually unmentionable subject; how boring is a production job? Cameramen spent an entire eight hour shift with an employee who operated an admittedly repetitive punch press operation in the company's West Pullman works. An accompanying article pointed out that if this employee "worked in a vacuum, his job would be a dull one. But so would the plowman's and the housewife's. For a man who likes machinery and people and the satisfaction of useful work a job like the employee's offers interest and variety that would surprise the casual factory visitor . . ." —From *Industrial Relations News*, July 26, 1958.

Letters

To the Editor:

The August, 1958, issue of *Atlantic* magazine features an excellent article on the threat of "bigness" in the United States. The article points out how bigness may contribute to mediocrity and the decline of individualism and the American spirit. At the conclusion of the article the author mentions several people who are true individuals by virtue of their personal, valuable contributions. These words appear: "One is as big as Edith Hamilton, the classicist, the lover of Greece and moderation; and as Alice Hamilton, her younger sister, who pioneered in the dangerous field of industrial medicine."

It is gratifying to see a practitioner of industrial medicine accorded a place with a few of the prouder human beings of the Twentieth Century.

H. H. HARDEE

To the Editor:

Since publication of my article on the history of silicosis in Japan in April, 1958, in this journal, an older item has come to light. This may hold some appeal for the history-minded among your readers. In that article I mentioned the oldest known prescription for silicosis was believed to be made by Dr. Masuda about 1680, thirty years before Ramazzini's work was published. Dr. Masuda gave this prescription to Dr. Matsuoka but it long has been believed that the prescription was lost. Now, however, Dr. Kubota, who is a famous investigator of occupational diseases of Japan, has received a letter from another Dr. Matsuoka, who astonishingly enough is the 15th descendant of the first mentioned Dr. Matsuoka. This present Dr. Matsuoka is a worker on silicosis at the Medical School of Tohoku University. He advised Dr. Kubota that he discovered this old prescription of Shikintan in a letter box of his great grandfather, who died 30 years ago at the age of 88. This grandfather who, likewise, was a physician had stored this prescription: Chickusetsu-ninjin-matsu, 1.5 g; Ukin-matu, 1.5 g; Shikin-matsu, 1.0 g; Kansoh-matsu, 1.0 g; Koketsu-matsu (?), 0.5 g.

This prescription is believed to be modified from the old one by this doctor who learned European medicine a little, but the drugs used are evidently those of Chinese medicine, which was the medicine of Japan before European medicine came. I know nothing about these drugs or how they act. To some of us this old prescription is of extraordinary interest.

—MASASHI SUZUKI, M.D.
Institute of Industrial Health
Kawasaki, Kanagawa-ken, Japan

Books

The Beloved One

***Industrial Hygiene and Toxicology*, Second Revised Edition, Volume I, General Principles, Frank A. Patty, Interscience Publishers, New York, pp. 830, $17.50**

In every branch of science some one book is the "beloved" one. What makes a technical book beloved usually derives from such broad coverage that every worker in the field is able to identify himself with it through portions of the contents with which he feels in rapport through personal experience. This is the beloved book in industrial hygiene.

This volume, one of a series of three, adheres to the format of the first edition. Newness is found in sections devoted to Noise, Heat, Human Engineering and Industrial Safety, Industrial Sanitation, Air Pollution and Illumination. The contents of the older sections have undergone extensive revision. Volume II (perhaps one year ahead) will be devoted to toxicology, while Volume III without precedent in the first edition (still further ahead in time of appearance) will relate to analysis of the industrial environment. This first volume bears the subtitle of "general principles," but this is no philosophical laying down of backdrop material. From the beginning it is factual, technical and oftentimes clinical, although it is manifest that the editor has sought to minimize clinical medicine in this volume.

The editor of a massive book with numerous contributors is harried by unequal responses by his authors. The more agile penned may furnish excellent copy with a few months of assignments. The dilatory ones, no less able, may dally over their tasks for years. This book reveals a wide spread in years of copy procurement. Somewhere in the situation is a paradox in that the more cooperative some of the authors proved to be, the more they were penalized by untimely statements. The recalcitrant ones ended up with the most advanced copy. An editor's lot is not an easy one.

The publishers of this book already must have winced over some defections. A few typographical errors strike annoying blows. Some lack in uniformity in type face for chapter subdivisions is confusing. The worst offense lies in the different color of paper stock for those chapters with photographic illustrations. That stock could have been matched in color and, if not, dyeing the edges might have saved the day. After all, this is a $17.50 book.

The arrival of this first volume makes the waiting for Volumes II and III just a little more painful.

Another Modern Monograph

***Rehabilitation in Industry*, Donald A. Covalt, M.D., Grune & Stratton, New York and London, Sept. 1958, pp. 154, $6.00**

This is another in the Modern Monographs in Industrial Medicine series as edited by Dr. A. J. Lanza.

"The advent of the machine age and the overwhelming progress in mechanical efficiency have, of course, been a great boon to industry. Methods have been devised to eliminate waste of time and energy and increase production with considerable economic advantage. Safety standards have been developed and applied to protect the employee on the job, and have proved essential adjuncts to industry.

An appalling problem which has not yet been resolved effectively is the waste of injured workmen who have not been returned to their jobs. Whereas waste of time on the job slows production, loss of time in returning to the job after injury is waste of life itself in a social, economic and moral sense. The longer the delay, the greater and the more appalling is this waste.

Rehabilitation is a true salvage job. Since it concerns human life and its values, the salvage job must assume a place of urgency and priority. In approaching the problem with this assumption, we are fortunate to be living in a country where the welfare of the individual is dominant in the social structure.

The injured workman might be considered analogous to a damaged ship. To save such a ship, repairs must begin at the earliest possible moment in order to maintain or to restore it to seaworthy condition. If it is left idle and neglected, its timbers will gradually rot until it sinks, becomes overgrown with sea life and disintegrates beyond salvage.

Between 1949 and 1954 a total of 35,525 disabled persons whose disability resulted from employment accidents were rehabilitated under the Federal-State Rehabilitation Program. This is estimated to be one-half the number of industrially injured who could have benefited from rehabilitation services."

Important Periodical

***British Medical Bulletin*, Volume 14, Number 2, May 1958, Medical Department, The British Council, 65 Davies Street, London, W1, England, $4.00**

The object of this review is not a book but a featured issue of a regular periodical. What is important is that in this issue there has been assembled an impressive array of data chiefly related to the chemical causation of cancer. Many of these chemicals find daily application in industrial operations. The age old question as to what causes cancer should be modified. Near to two hundred chemicals are known to be initiating agents in cancer causation. The real question now becomes: What is the modus operandi of these chemicals and all other causes of cancer that provokes aberrancy in cell life eventuating in the malignant new growths known as cancer. The old question was "What"; the new question is "How." This "how" of cancer is well explored in this publication, but to no final conclusion. Some emphasis is directed to the possibility that all cancer represents mutation forms. Readily the public has accepted the representation that radiation damage in part involves mutation deviations. It may be true that were there no radiant energy anywhere in the world, still that world long might have been harboring harmful chemicals fully capable of inducing harmful mutations including cancer as one. Of the 22 chapter headings, eight listed below are closest to occupational health:

Chemical Carcinogens and their Modes of Action

Some Posssible Exogenous Factors in the Causation of Lung Cancer

Carcinogenicity of Mineral Oil Fractions

Occupational Carcinogenesis

Aromatic Amines as Carcinogens in Industry

Some aspects of the Experimental Induction of Tumors of the Bladder

The Biochemistry of Cancer of the Bladder

Despite the concentrated depression this presentation causes, it does not follow that occupational cancers in large number are a prospect. Nine out of ten industrial physicians never have encountered an occupational cancer. The majority never will.

Classic Reissued

George Baker, M.D., *The Endemial Colic of Devenshire* (London, 1767) reprinted by Delta Omega Society, 1958, 74 pp. in facsimilie, and portrait, $5.00.

The Delta Omega Honor Society in Public Health at rare intervals republishes a few of the scarce classics in public health. The first was *Typhoid Fever* by William Budd in 1931, the second was *Snow on Cholera* in 1936, the third was *Panum of Measles* in 1940 and now another of these classics appears, George Baker's essay, *Endemial Colic of Devonshire*. Originally this was published in 1767 in London. Prior to that time, and possibly for a period longer than one hundred years, the people of Devon had been beset by a strange malady present notably in the autumn. For decades this baffled the best medical minds, but foolish theories and conclusions were not lacking. Dr. Baker's exploration proved beyond peradventure that Devonshire colic was lead poisoning from lead present in cider. All too much

lead was used in cider making and all too much lead poisoning was the consequence.

Not mentioned in Dr. Baker's essay, as would not have been expected, is that in profound appreciation of his notable contribution to the public health of his native Devon, the good people in scorn and derision hanged Dr. Baker in effigy. Likewise unmentioned in the essay but well documented elsewhere is the probability that the spurring of Dr. Baker to this investigation came from America's Benjamin Franklin who was stationed in London at the time, and frequently George and Benjamin dined together. Benjamin Franklin knew of lead poisoning which he called "the dry gripes" from his early reportorial days in Boston at the time of the famous and infamous rum episode in which lead poisoning sprang from lead still worms and still heads.

Copies are available from The Book Service, American Public Health Association, 1790 Broadway, New York 19, N. Y.

About My Operation

Straight To The Heart: **George Lawton. International Universities Press, Inc., New York, 1956, pp. 347, $5.00**

In an old drama the locus of one scene was the inside of the hero's stomach. This constituted intimate theater. This book, in no small part, is staged inside two hearts of the author . . . one heart is the anatomical one: the other is the emotional heart, even more extensively laid bare.

This is a personal account of thoughts and feelings in preparation for heart surgery and while undergoing that surgery. This is "About a man, his heart and his mind . . . About a husband relying more and more on his wife as he becomes helpless . . . About a wife struggling to save her husband and their life together . . . About his fears when his heart weakens and threatens to stop; his mental confusion after his heart is operated on; his elation when his heart is reborn; and the great joy of the husband and wife when their marriage also is reborn . . . About all the other men and women who also were severely ill once and are well now, who also were afraid, confused, elated, reborn."

Apart from the factual ground laying, it is probable that out of some 20 book reviews on this item, few would bear any similarity one to another. The range of appeal is enormous. For some the focus would appear to be upon the psychoanalytic procedures antedating the surgery. Others would view the surgery itself as the core of this presentation extolling as it does the dramatic qualities of new developments in surgery of the heart. Still others would find the emphasis in highly developed, spiritual qualities attending this author's family life. Still another group will find deep meaning in this book as a superb crystallization of every medical and surgical patient's apprehension, fears and dreads as he faces a journey into the operating room. All of these approaches are justified and no one stands out in domination over all others.

This present review finds in the book a direct communication to all physicians calling for better realization that every patient, even for trivial medical procedures and relatively unimportant surgery, possesses tremendous emotional agitation perhaps little warranted but no less real. For the busy surgeon a herniotomy is distinctly routine in the midst of half a dozen operations on the same day. The surgeon sees few risks, scant uncertainty, and a fairly well assured outcome. Not so for the patient. For him the event is momentous, every detail a part of the total wonder. For many, even the simple operation is destined to become the outstanding event of a lifetime. Thus it follows that one of the duties throughout the hospital episode is to deprive the patient of all possible anxieties.

This book is the voice of a million patients who have faced the ordeal of impending surgery. This is a superb and fascinating portrayal of the author's two stout hearts.

Rehabilitation and Heart

Rehabilitation of the Cardiovascular Patient: **P. D. White, H. A. Rusk, P. R. Lee and B. Williams. McGraw-Hill Book Company, Inc., New York, 1958, pp. 176, $7.00.**

Last year these same authors produced a small book publication similar to the present one. Some persons have assumed that the present publication is but a reprinting or new edition of the first mentioned. Such is not the case, the present book being different from title page to index. The authors state their views on rehabilitation in the preface as follows, "In this book the authors use the term rehabilitation in its broad context to designate all those services which the individual with a cardiovascular disability needs in order to live as rich, satisfying, and productive a life as possible. Rehabilitation, in this context, is the responsibility of every physician. This book, therefore, is not directed to any particular specialty of medicine but rather to all practitioners who bear the responsibility of managing patients with cardiovascular disabilities."

Reporting on all recent advances and experiences in the field, this new volume contains for the first time in a medical textbook specific procedures for the rehabilitation of patients who have suffered cerebrovascular accidents. This work also outlines many specific procedures for the rehabilitation of patients with rheumatic fever and/or heart disease, congenital heart disease, hypertension, hypertensive heart disease and coronary artery disease.

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Legal Condonement of Unintentional Suicide

This Bill of Amendment is here published for the scrutiny of all industrial physicians. Obviously the above caption is not that of the Bill as introduced.

"85th CONGRESS
1st Session H. R. 7303

IN THE HOUSE OF REPRESENTATIVES

May 7, 1957

Mr. Roosevelt introduced the following bill; which was referred to the Committee on Education and Labor

A BILL

To amend the Longshoremen's and Harbor Workers' Compensation Act, so as to provide that an injured employee shall have the right to select his own physician, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 7 of the Longshoremen's and Harbor Workers' Compensation Act is hereby amended to read as follows:

'SEC. 7. (a) The employer shall be liable for the expenses of such medical, surgical, or other attendance or treatment, nurse and hospital service, medicine, crutches and apparatus necessitated by the injury of the employee for such period as the nature of the injury or the process of recovery may require.

'All fees and other charges for treatment or care under this section shall be limited to such charges as prevail in the same community for similar treatment or case of injured persons of like standard of living, and the level of prevailing charges shall be interpreted by the deputy commissioner.

'(b) The deputy commissioner, before whom a claim is being heard, on his own motion, or upon a motion of the employee whose claim is being heard, may require the examination of the employee by a physician selected by such deputy commissioner, and may require a report from such physician covering such matters as the deputy commissioner specifies. The employer or his insurance carrier may, in the discretion of the deputy commissioner, be ordered to pay for such an examination in such an amount as may be directed by such deputy commissioner.

'(c) (1) An injured employee may, when care is required, select the physician who is to treat him. If for any reason during the period when medical treatment or care is required the employee wishes to transfer his treatment and care to another physician, he may do so in accordance with rules prescribed by the deputy commissioner. If hospitalization or institutional care is required, the employee may select the hospital or institution to render such care, and the employer shall be liable for food, clothing and maintenance furnished by such hospital or institution to the employee. If the employee is unable, due to the nature of the injury, to select his own physician, hospital, or institution, and the emergency nature of the injury requires immediate medical treatment and care, or if he does not desire to select his own physician, hospital, or institution and so advises the employer in writing, the employer shall promptly provide him with the necessary medical treatment and care; but the employee, when subsequently able to do so, may select his own physician, hospital, or institution for the continuance of any medical treatment or care required.

'(2) The deputy commissioner shall prescribe the form of a notice informing employees of their privilege under this subsection, and such notice shall be posted and maintained by the employer in a conspicuous place or places in and about his place or places of business.

'(3) If the employer believes that care being rendered to an injured employee is not adequate and it would be to the best interests of the employee that a physician other than the attending physician treat the employee, he may file an application with the deputy commissioner having jurisdiction of the claim for the purpose of obtaining an order to that effect. If the deputy commissioner finds it to be in the best interests of the employee to transfer to another physician, an order may be entered to that effect and the employer would be relieved of the responsibility of paying for further services of the attending physician: Provided, however, That nothing herein contained shall operate to prevent such employee from selecting another physician of his choice.

'(4) The employer shall be entitled to have the claimant examined by a physician of the employer's choice at a place reasonably convenient to the claimant, and in the presence of the claimant's physician, and refusal by the claimant to submit to such examination at such time or times as may be reasonably necessary in the opinion of the deputy commissioner shall bar the claimant from recovering compensation for any period during which he has refused to submit to such examination.

'(d) The employer shall have the right to a hearing before the deputy commissioner at any time he believes charges for medical care, services, or supplies are exhorbitant."

SEC. 2 Subsection (a) of section 13 of said Act is hereby amended to read as follows:

'SEC. 13. (a) The right to compensation or disability under this Act shall be barred unless a claim therefor is filed within two years after the injury, and the right to compensation for death shall be barred unless a claim therefor is filed within two years after the death, except that if payment of compensation has been made without an award on account of such injury or death, a claim may be filed within two years after the date of the last payment. Such claim shall be filed with the deputy commissioner in the compensation district in which such injury or such death occurred.' "

* * *

Here is a legislative proposal which, if enacted, would almost entirely deprive any employer utilizing labor covered by Longshoremen's and Harbor Workers' Compensation Act of any opportunity to participate in the medical care of any injured employee. Although channels of protestation are provided, they are cumbersome and feckless in that any injured workman over and over is permitted to retain the right to select for his medical care any person duly licensed to carry out medical ministrations regardless of professional competency or professional or personal integrity. Many of those who plead mightily for the utter freedom of choice of the source of medical care for industrial injuries fail in realization that next to the injured workman himself and his family, the employer stands in line in the stark desire for good medical attention. He is the one above nearly all of those who seeks the prompt return of his injured employee fully restored to health and work capacity, free from any hampering sequelae, without prospect of the development of pestiferous neuroses and at lowest cost compatible with full and suitable medical care. Fortunate is the injured workman whose acumen prompts him to turn to his employer at the time of injury.

While the pages of this Journal are open to any medical writings in advocacy of the free choice of physician in connection with industrial injury or in advocacy of the counter-part of freedom of choice, this Journal itself is no declared advocate at this time of either position. Yet, this Journal in consternation observes two powerful labor groups (although this Bill not necessarily is identifiable with any labor organization) advocating precisely opposite measures as to the sources of medical care for the occupationally injured. On the one hand stands the United Mine Workers, uncompromising in demands for restriction in the choice of physician while, presumably, this Longshoremen's Group seeks legal certainty that the choice of a physician shall be without let or hindrance. In many situations, as the adage runs, "There is your side and my side and then the right side." In the present situation it is not manifest that either of the positions noted, beyond per adventure is the right side.

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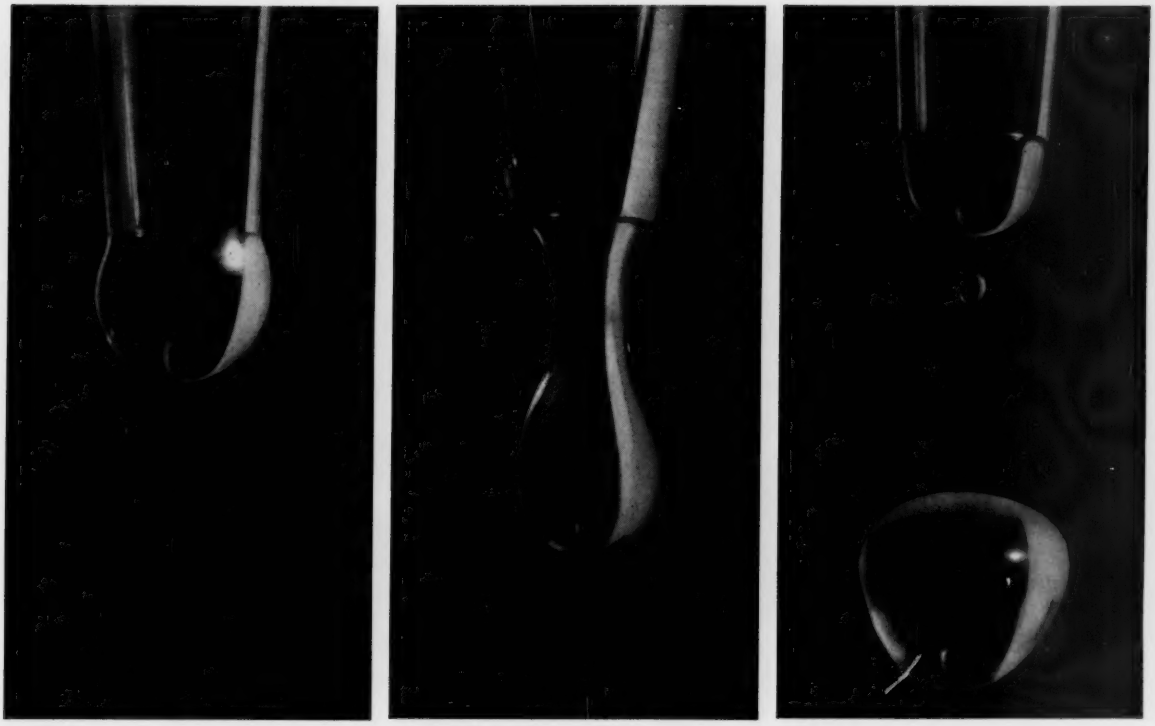
3 Billion 400 Million Days Off

Illness or injury caused the American people to stay home from work, stay in bed, or otherwise cut down on normal activities for about 3 billion 400 million days during the year ending June 30, 1958. This total of disability, which averaged 20 days per person per year, is reported in the first U. S. National Health Survey publication to provide figures from a full year of nationwide household interviewing.

Acute illnesses, including acute respiratory conditions, totaled 437,900,000, or an average of about 2.6 per person. How many of these illnesses were caused by Asian influenza is not known. However, the report shows that acute respiratory conditions caused an average of about 7 days of restricted activity per person, including days in bed or days lost from work or school.

About 47,000,000 persons were injured seriously enough during the year to cause them to restrict their activities for a day or more or seek medical attention, the report shows. Injuries caused 424,100,000 days of restricted activity, or 2.5 days per person.

The importance of chronic conditions is indicated by the fact that circulatory diseases alone were the cause of 484,200,000 days of restricted activity, which would be the equivalent of about 2.9 days per person. The circulatory diseases rank higher than any other group of chronic conditions in this respect.



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The high degree of therapeutic activity of this new compound and its negligible side reactions yield distinct clinical advantages.

- Zanchol produces a bile low in sediment.
- Zanchol enhances the abstergent quality of bile.
- Zanchol produces a deep, brilliant green bile, regardless of its original color, suggesting improved hepatic function.
- Zanchol improves the flow and quantity of bile without increasing total bile solids.

Bile with these qualities minimizes biliary stasis, reduces sediment and debris in the bile ducts and discourages the ascent of infection.

For these reasons ZANCHOL has shown itself to be a highly valuable agent in chronic cholecystitis, cholangitis and care of patients following cholecystectomy.

Administration: One tablet three or four times a day. Zanchol is supplied in tablets of 250 mg. each. G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

SEARLE

More effective than aspirin

. . . to reduce children's fevers

Better total effect in pain-relief than aspirin or buffered aspirin

Pharmacological tests have demonstrated that one of the components in Anacin (acetophenetidin) is superior to aspirin in febrifugal activity by a ratio of 5 to 3. Hence, aspirin has only 60% of the fever-reducing action of acetophenetidin.[1] Anacin Tablets also exert a *better total effect* in pain-relief because they not only ameliorate the pain but also allay nervous tension, restlessness and depression. Anacin leaves patients comfortably relaxed. There are no gastric upsets or side effects.

ANACIN®

WHITEHALL LABORATORIES
NEW YORK, N. Y.

Reference: 1. Brownlee, George D.: *A Comparison of the Antipyretic Activity and Toxicity of Phenacetin and Aspirin*, Quar. J. of Pharmacy and Pharmacology, 10:609-620.

COMMENT AND OPINION

Scurvy, once the occupational disease of sailors, is found now almost exclusively in the pediatric clinic owing to faulty infant feeding habits.

—From *New Orleans* (La.) *States*, October 29, 1958.

Charlatans and Dupes

An experiment conducted at a recent conference of personnel managers at the University of Illinois indicates that many of them are likely to buy personality tests "with no scientific evidence that the service offered has any value whatever." Reporting this experiment in a recent issue of *Personnel Psychology*, professor Ross Stagner of Wayne State University says that following high-pressure sales pitch commonly used by salesman in dispensing unvalidated personality tests, the salesman asks the personnel manager to take the test himself, and promises him a report based on his scores. The salesman says that unless the report is "amazingly accurate" he won't even try to sell the test to the personnel manager. The gullible personnel manager takes the test, reads the report, is amazed by its accuracy and spends a lot of his company's money for a device not worth the paper and printing. If this sounds extreme, Stegner describes the experiment conducted among 68 personnel managers at the University of Illinois conference. Personnel managers were given a published personality test and told that the results would be returned within a few hours. However, *two* reports were prepared for each man. One report gave the actual score based on the test norms. The other report was a "fake" personality analysis with the person's name written in red pencil at the top of the sheet and 13 items, collected from dream books and astrology charts, circled in red. Uncircled items on the sheet were rather critical comments about the personality being tested. Following are a few of the 13 items circled: "You have a great deal of unused capacity which you have not turned to your advantage"; "You pride yourself as an independent thinker and do not accept others' statements without satisfactory proof"; "At times you are extroverted, affable and sociable, while at other times you are introverted, wary and reserved."

Each personnel manager received the same fake personality analysis. Of course, he was under the impression that the report had been designed just for him. He was then asked to rate how accurately he thought the personality analysis described his personality, using the following five-step scale: amazingly accurate; rather good; about half and half; more wrong than right; almost entirely wrong. Ninety percent of

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the personnel managers found the fake personality analysis either "amazingly accurate" (50%) or "rather good" (40%). Ten percent rated the analysis as "about half and half." By comparison, when similar experiments were conducted among a group of industrial supervisors, only 81% chose the first two steps on the validity scale. And when the experiment was conducted among a group of college students, only 62% marked the description of their personalities as "amazingly accurate" or "rather good."

—From *Industrial Relations News*, November 8, 1958.

Dangerous Dolls

A stern warning against the danger of Haitian "Voodoo Dolls," sold in this country as novelties, was issued by United States Occupational Health Services in Cincinnati. Tests showed the dolls have harmful effects on persons handling them. The figures, carved from cashew nut shells, are imported from Haiti and sold here as beverage "swizzle sticks" and other novelties. Volunteers at Public Health Service's Occupational Health Field Headquarters in Cincinnati tested with pieces of the shell developed blisters within 35 to 50 minutes. Analysis of the dolls revealed that the cashew nut "head" contained a shell liquid chemically similar to the oil in poison ivy. The doll's eyes, believed to be lethal jequirity beans, possibly are more dangerous than the cashew nut head. Tests indicate that one of the eyes taken internally by a baby could cause fatal illness. The cashew nut dolls are the only source of the trouble. Similar dolls carved from coffee beans do not present a problem. To distinguish: the cashew nut shell is kidney shaped and is an inch or more long and about three quarters of an inch broad. Coffee beans are much smaller.

—From *Cincinnati* (Ohio) *Enquirer*, Nov. 21, 1958.

Mental Ills Attacked

Any cause which costs American industry three billion dollars annually is likely to draw much attention, but when it involves human health it assumes even greater importance. Such a cause is reflected by the employee who brings his home problems to work, and is generally referred to as mental illness in industry.

Assuming the proportions of the common cold as an industrial malady and equally as contagious, emotional problems are being pursued by various organizations and by individual employers. Six firms in the U. S. now employ psychiatrists full time and a growing list of others have them on the payroll part time or on a consulting basis.

Such organizations as the American Management Association, the Industrial Medical Association and the American Medical Association have directed their attention toward curtailing industrial mental illness, which is responsible for 60-80% of employee dismissals.

A newly formed group within the ranks of the American Medical Association known as the Joint Committee on Mental Health in Industry meets for the first time this month in Chicago. A similar group dedicated to the study of industrial emotional illnesses was formed this year within the Industrial Medical Association. Both of these groups are providing badly needed professional help in eradication of the problem.

One of the significant advances in recent years in analyzing the effect of emotional problems on human output is recognition that an employee troubled with personal problems is likely to influence the morale of his coworkers. This is why mental illness in industry is regarded as closely paralleling the contagion of the common cold in lost productive hours.

All of the efforts now turned on emotional problems of all levels of workers in industry are designed to help the individual solve the problems which are making him unhappy, accident-prone, listless and a potential candidate for disciplinary action.

When successfully initiated, such campaigns will produce not only higher industrial efficiency but happier, more useful, citizens.

—From *Texarkana* (Arkansas) *Gazette*, Nov. 23, 1958.

Accent on Ability

It's the normal healthy person — not the disabled or physically handicapped — who needs "treatment" and help today in the field of rehabilitation. That's the belief Jean S. Felton, M.D., who was one of three rehabilitation authorities at the 16th annual conference of the Oklahoma Health and Welfare association, Oklahoma City, Nov. 19-21, 1958.

SPRAY ON FAST RELIEF FOR BURNS AND WOUNDS

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Dr. Felton is interested in the greater utilization of the physically handicapped through employment. The major question now, he pointed out, is why certain employers won't hire them.

Facts show that the handicapped are more productive, that they have fewer injuries on the job and that their absenteeism rate is no greater than that for the normal worker.

"So why is it still an extremely difficult step for some employers to hire the handicapped?" questioned Felton, who is now professor of occupational health at the University of California medical center in Los Angeles.

"There's only one answer. The person who does not employ the physically handicapped is one who is uncomfortable in his presence. If it were not on an emotional basis, he would hire them," said Felton.

If you talk with such employers, you'll find there is some unpleasant incident in their past, some fear or some guilt which makes them ill at ease when a handicapped person is around.

The problem in rehabilitation doesn't lie with the disabled persons, he said. They are usually able to face the situation, but much of the public can't. The normal person gets emotionally upset when faced by the situation. He may be overly solicitous, too helpful, or he avoids any evidence of physical handicaps or feels ill at ease. And usually, the normal person doesn't recognize his own emotional problem.

"The fault lies with the normal persons, with their attitudes, emotions and their inability to accept the physically handicapped as a person," said Felton.

Felton, along with Dr. Frederick Whitehouse, one of the general conference luncheon speakers, and Irene Hollis, of the American Occupational Therapy association, led a section on rehabilitation at the health and welfare association conference. About 750 persons in social work and related fields attended. —From *Oklahoma City Oklahoman*, Nov. 19, 1958.

Health Propaganda

An active and sustained program to help employees become health conscious can sharply reduce the illness rate, Dr. Thomas H. Hogshead, Medical Director of Du Pont's Engineering Department, told members of the American Society of Mechanical Engineers on December 5, 1958. At the close of World War II, Dr. Hogshead said, a survey of the health of Du Pont engineers disclosed " a critical situation, particularly in the area of cardiovascular disorders. An active health program geared mainly to the prevention of heart trouble and related disorders was put into operation. . . . The health record changed for the better almost immediately."

Following consolidation of the Engineering Department in a new headquarters building outside Wilmington in 1953, the Medical Division launched a broad program designed to help employees become health conscious.

As evidence of its success, Dr. Hogshead said, "With an average of 2,500 men and women over the five-year period, 1953-1957 . . . our sickness absenteeism is 1.3% of the total hours scheduled

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for work. The average for comparable industrial groups is usually some two to three times this figure."

Employees paid an average of 10 visits each to the Medical Division in 1957, he reported. Services include annual physical examinations which continue a company policy established in 1926, preventive inoculations, and other activities. He emphasized the preventive nature of the program and the encouragement of visits to the Medical Division at any time the employee wishes.

Emphasizing the important role of supervision, Dr. Hogshead said, "Although a supervisor is not expected to be an amateur doctor, he is made to feel it is part of his supervisory responsibilities to be alert to the need of employees for health attention, and to direct them to where help can be found.

"A supervisor is in the best position to stimulate employees under his direction to accept the idea that good health is a necessary part of good performance. . . . As a result," he said, "health problems usually come to our attention in their very early stages when they are much easier to treat than in later stages. Either the employee or the supervisor can come to the Medical Division when a problem arises, and no appointment is necessary."

"There was one factor of considerable help to the Medical Division in launching its program," Dr. Hogshead said. "This was the Du Pont Company's traditional concern for, and insistence upon, safety. It is an accepted responsibility of Du Pont management and supervision to carry on an insistent, continuing program to instill the desire for safety, and the consciousness of safety into the minds of every employee."

"The safety program over the years," Dr. Hogshead said, "had conditioned the personnel of the Engineering Department to recognize that good health also is basic to security. There can be no safety consciousness without its companion — health consciousness — and the reverse, no doubt, is equally true."

As an indication that safety consciousness and health consciousness complement each other, Dr. Hogshead said, "The organization achieved a safety record during the five years of only one lost-time injury during some 25,000,000 exposure hours. Had our experience been no better than the national average, we would have had 125 serious injuries.

"Although the people in the organization travel an average of 26 miles a day to and from work, mainly by private automobile, they did not have a time-losing injury on the road during 400 calendar days in 1956-1957. The national experience for this period would indicate 23 time-losing injuries."

in skin traumas...

Rapid healing of tissue

Speeds the return to work

Sept. 25. Second and third degree burns caused by flaming gasoline. Gauze pressure dressings of Vitamin A and D Ointment were changed at weekly intervals.

Oct. 25. Healing is complete, with minimal scar tissue and no contractures.

White's Vitamin A and D Ointment

—The topical application of White's Vitamin A and D Ointment—to promote healthy granulation and rapid epithelization—is particularly valuable in the treatment of burns, abrasions and traumatic lacerations. Other indications include chafing, sunburn, slow-healing ulcers and bedsores. White's Vitamin A and D Ointment presents the A and D vitamins in the same ratio as found in cod liver oil, in a pleasant, soothing, lanolin-petrolatum base. White's Vitamin A and D Ointment will not stain the skin and is easily laundered from clothing. Keeps indefinitely at ordinary temperatures.

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Liquidproof Industrial Gloves

All Neoprene Stanzoils®
give liquidproof protection in 103 basic oils, acids, caustics, greases and solvents.

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Medical Director: 2 yrs, Indus Phys, impor co; 4 yrs dir State Hlth Dept; 3 yrs dir Med Dept & Safety; trng Indus Med; Cert'd Occupational Med, isotopes & rad defense; 30s.

Medical Director: Tchg fellow short time, indus med. univ Mich; indus staff phy; 2 yrs genl priv pract; prefers MW area; early 30s.

Medical Director: M.P.H. 10 yrs; exper, indus med; exceptionally quald indus hygiene; N east, West Coast, or foreign; speaks French, Spanish; immediately available.

Medical Director: 6 yrs indus phy, lge co; currently Med Dir; seeks sml plant or plants West, preferably Washington; well-qual'd.

Medical Director: Prefer lge responsibility indus field; 3 yrs excl res, genl & ortho surg; 2 yrs asst, 3 yrs Med Dir; middle 30s.

Industrial Surgeon: 2 yrs chief surg, presently Med Dir, div of lge corp; seeks assn w/ cl or surg limitg prac to Indus Surg; prefers So, SE, SW, early 30's.

Internist: trnd univ hsps; nr certifn, Int Med; seeks assn Indus Med; Pacific coast, Southwest, or South area; early 30's.

Staff Physician: 1 yr, Flight Surg; prefers aviation med; seeks Midwest or East; Age 27.

Staff Physician: 2 yrs Med ofc; 1 yr priv pract; 2 yrs asst Phy, impor foundation hsp; exper cl pract; seeks indus med post in Florida, Ala, or Georgia only; age in 30's.

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Staff Physician: would like oppor for advancemt; 5 yrs priv, genl, pract; prefers eastern locality; middle 30's.

Staff Physician: 3 yrs priv, genl, pract; staff exper, railroad; prefer foreign job; if U.S., So. or SW; early 30's.

Staff Physician: Grad good med shl; 5 yrs. priv pract; 2½ yrs hsp Phy & Psy; 3½ yrs, Phy; some publ hlth wk; seeks Indus position desires Ohio, possible foreign appt; 30's.

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INDUSTRIAL MEDICINE: Immediate opening; serve important company w/ 6,000 employees; full-outpatient dept — 7 nurses; prefer Internist; $15,000, other benefits; not too far from large, university city, Southwest.

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Jeffords, J. V., and Hagerty, R. F.: Ann. Surg. *145*:169, 1957.

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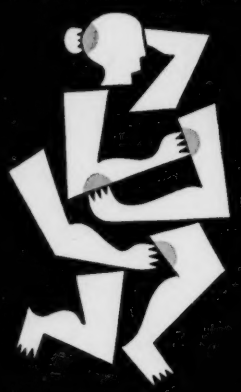

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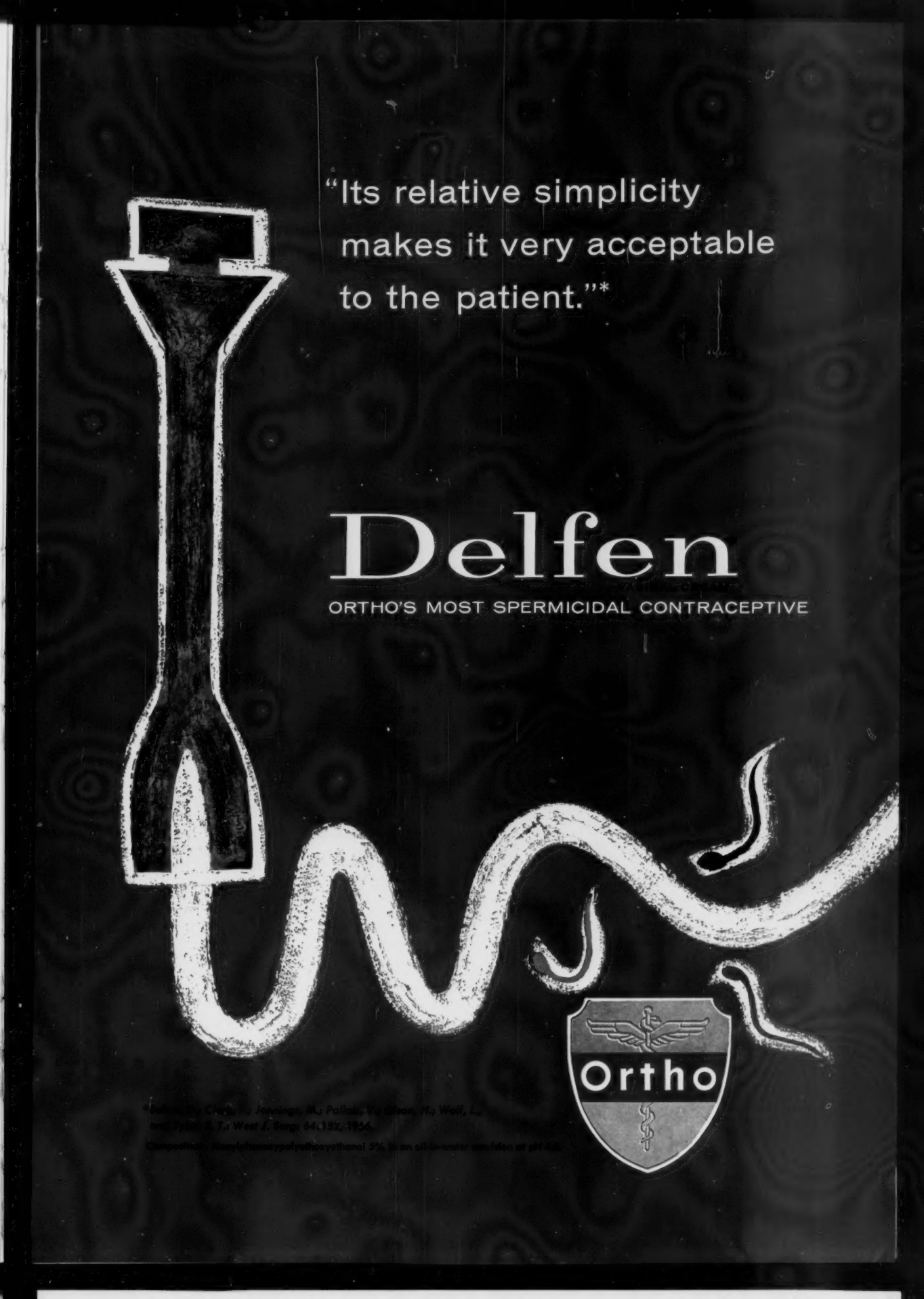

*Delfen: Dr. Clark in Jennings, M.; Pollack, W.; Gibson, H.; Wolf, L.; and Pyles, R. T.: West. J. Surg. 64:152, 1956.

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1. Crumpacker, E. L., et al., AMA Arch. Int. Med., 98:314.
2. Palmer, E. D., "Clinical Gastroenterology" Hoeber-Harper.

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Formula: Each capsule contains:

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Hyoscyamine sulfate (1/2000 gr.)	0.031 mg.

Dosage: One or two capsules as required. In industrial practice, Murray noted that "because of the complete absence of side effects, it is justifiable to increase the medication to two tablets every four hours."*

Supply: Bottles of 100 and 500 capsules.

*Dr. R. J. Murray, Medical Dept., Sperry Gyroscope Co., in an article published in the New York State Journal of Medicine, August 15, 1953 (Vol. 53, No. 16).

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Physicians turn to Tessalon® to control cough

Single agent with multiple actions broadens cough therapy

A single therapeutic agent developed by CIBA research now does all that has been attempted with combination cough remedies. Extensive clinical trials, in this country and abroad, involving more than 3,000 patients with acute or chronic cough, show that TESSALON *has at least six advantages* that result in the better total management of the patient with cough:

1. TESSALON acts peripherally, to control cough where cough begins—in the chest.
2. TESSALON acts centrally, to control cough at the level of the "cough center" in vagal nuclei in the medulla.
3. TESSALON thins sputum.[1]
4. TESSALON increases vital capacity and ventilation.
5. TESSALON improves exercise tolerance.
6. TESSALON relieves dyspnea, wheezing, "blackouts."

Fewer coughs per minute

Shane and co-workers,[2] using the method of Bickerman and Barach,[3] induced measurable cough in 20 volunteers; a 15 per cent citric acid aerosol was used as the cough-producing agent and each volunteer was tested on three different occasions. The antitussive efficacy of TESSALON (100 mg.) was estimated to be 2½ times that of codeine (½ grain) in this test.

Cough suppressing activity of TESSALON[2]

	Average number of coughs*
No therapy	8.3
Codeine	4.4
TESSALON	1.7

*Based on 5-minute interval immediately following inhalation of citric acid to induce cough. Each patient underwent this test on three separate occasions.

Controls cough in the chest

It has been shown that the increased sensitivity of the sensory receptors in the lung during inspiration is an important part of the cough mechanism. TESSALON has a selective inhibiting effect on these dilation or "stretch" receptors[4] that helps to control cough where cough begins—at points of irritation in the chest.

Controls cough at the cough center in the medulla

Spinal reflex arcs were studied for the inhibitory effect of TESSALON on the transfer of afferent cough impulses to the efferent branch of the cough reflex.[5] TESSALON inhibited reflex transmission, when the afferent nerve was stimulated electrically. With this "damping" effect on the cough center in the medulla, TESSALON controls cough centrally, as well as peripherally.

Thins sputum

TESSALON controls cough frequency without interfering with productivity or expectoration. In fact, sputum is usually thinner, easier to raise.[1]

Effect of TESSALON on sputum[1]

Amount		Consistency	
Less	32 patients	Heavier	3 patients
More	2* patients	Lighter	27 patients
Same	16 patients	Same	20 patients

*These patients noted more but lighter sputum.

Increases vital capacity

Respiration usually increases both in depth and volume during TESSALON treatment.[6] In one study,[7] patients with chronic respiratory disease, with and without bronchospasm, showed a mean increase of 19.7 per cent in vital capacity after a 2-week course of TESSALON.

Improves exercise tolerance

By inhibiting stretch receptor activity, and by increasing air intake, TESSALON enables patients to tolerate exercise or work better, eliminates many paroxysms of coughing.

Relieves dyspnea

Farber and Wilson[8] note that one of the important contributions of TESSALON to cough therapy is "... its action as a reliever of dyspnea in some patients." Shortness of breath, wheezing, "blackouts" are not likely to trouble the patient treated with TESSALON.

Fast, prolonged action

The cough suppressant effect of TESSALON starts rapidly — usually within 15 to 20 minutes. The duration of the antitussive effect is prolonged — usually from 3 to 8 hours.

Indications

TESSALON is indicated in acute and chronic cough.

ACUTE: Common cold • Bronchitis • Pneumonia • Upper respiratory infection • Pleurisy • Spontaneous pneumothorax • Bronchial irritation provoked by gases and foreign bodies

CHRONIC: Pulmonary emphysema • Bronchitis (emphysematous, asthmatic) • Bronchial asthma • Tuberculosis • Other chronic pulmonary diseases • Pulmonary or mediastinal tumors

PROCEDURES: Bronchoscopy and bronchography • Thoracentesis • Thoracic surgery

Dosage

ADULTS: Average dosage is one Perle (100 mg.) t.i.d. If necessary, or where cough is refractory, up to 6 Perles (600 mg.) daily may be given.

CHILDREN UNDER 10: One Pediatric Perle (50 mg.) t.i.d. is the usual dosage.

The Perles should be swallowed without chewing, and, if necessary, with a liquid. Release of TESSALON from the Perle in the mouth produces a temporary local anesthesia of the oral mucosa.

Side Effects

TESSALON is well tolerated. Only occasionally have side effects been reported. Skin rash, nasal congestion and a vague "chilly" sensation have been mentioned. In rare instances, gastrointestinal upset, constipation or sedation have been observed. No adverse effects on respiration, kidney or liver function tests, blood count or urinalysis were reported.

Supplied

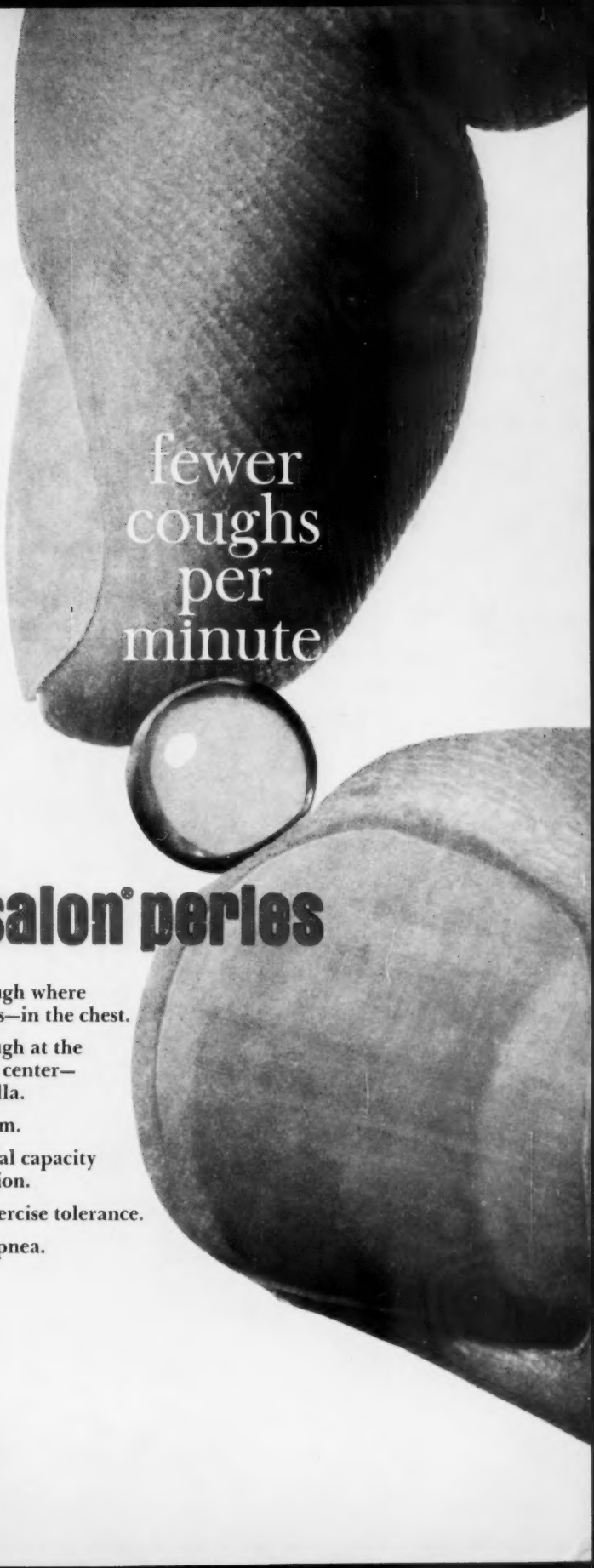
Perle form (liquid-filled gelatin spheres) provides speed of liquid medication — convenience and dosage accuracy of capsule medication. Available in two strengths: 100-mg. Perles (yellow), for adult use; 50-mg. Perles (red), for children under 10.

Samples available on request.

References

1. Simon, S. W.: Ann. Allergy 15:521 (Sept.-Oct.) 1957. 2. Shane, S. J., Krzyski, T. K., and Copp, S. E.: Canad. M.A.J. 77:660 (Sept. 15) 1957. 3. Bickerman, H. A., and Barach, A. L.: Am. J. M. Sc. 228:156 (Aug.) 1954. 4. Bein, H. J., and Bucher, K.: Helvet physiol et pharmacol. acta 15:55 (March) 1957. 5. Meier, R., and Bein, H. J.: Personal communication. 6. Michelson, A. L., and Schiller, I. W.: J. Allergy 28:514 (Nov.) 1957. 7. Bickerman, H. A.: To be published. 8. Farber, S. M., and Wilson, R. H. L.: To be published.

TESSALON ® (benzonatate CIBA) 2/265IMK



Tessalon® perles

Controls cough where cough begins—in the chest.

Controls cough at the cough reflex center—in the medulla.

Thins sputum.

Increases vital capacity and ventilation.

Improves exercise tolerance.

Relieves dyspnea.

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in over three years of clinical use
in over 600 clinical studies

Specific

FOR RELIEF OF ANXIETY
AND MUSCLE TENSION

Selective

Does not interfere with autonomic function
Does not impair mental efficiency,
motor control, or normal behavior
Has not produced hypotension,
agranulocytosis or jaundice

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Miltown®

Supplied: 400 mg. scored tablets, 200 mg. sugar-coated tablets.

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